STATE OF MARYLAND
DEPARTMENT OF LICENSING AND REGULATION
OCCUPATIONAL SAFETY AND HEALTH
ADVISORY BOARD HEARING

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In the matter of:

PROHIBITING SMOKING IN
THE WORKPLACE

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Crownsville Hospital Center
Con-Met Room
Crownsville, Maryland

Thursday,
December 9, 1993

The hearing was convened, pursuant to notice, at 10:00 a.m., MR. HOWARD E. MARSHALL, Chairman, presiding.

APPEARANCES:

Board Members:

ROBERT C. NOBILE
MICHAEL C. SNEAD
BARBARA N. GILFORD
ROBERT L. LAWSON
SHIRIN DE SILVA, MD
EDWARD W. QUIDAS, JR.
BERT BEHRINGER
HENRY KOELLEIN
ELAINE PATRICK, ESQUIRE
Counsel to Board

CAROLYN WEST

Speakers:

BRUCE BEREANO
MR. COSTELLO
DAVID REMES
PAT TYSON
DR. GIO BATTA GORI
STEVE PARRISH
SIMON TURNER
DELEGATE RAY HUFF
DELEGATE JOHN WOOD
JOHN F. BANZHAF
KATHLEEN E. SCHEG, ESQ.
PETER MEYERS
ATHENA MUELLER, ESQ.
FRAN A. STILLMAN
ANNE GARIAZZO
JAMES L. REPACE
ALBERT ERTEL
DR. JOSEPH ADAMS
MARSHA MARKS
ARNOLD AMASS
STEWART RHODES
KEITH BURKHARDT
IRA FADER
NORMAN ASTEL
MIKE PHIPPS
BUDDY BOWLING
STEVE WALTERS
TOM SAQUELLA
MARGARETA CRAMPTON
NEIL WILFORD
ALEXANDER WILLMAN
DAISY JACKSON
JOLANDA JANCZEWSKI
MAUREEN LAMB
EDWARD DREIBAND
SHARON BREEDLOVE, RN
LORI RHOADS

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ANTHONY G. MARQUART
WILLIAM WRIGHT

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P R O C E E D I N G S

CHAIRMAN MARSHALL: Good morning, and welcome. I'm Howard Marshall, chairman of the Maryland Occupational and Safety Health Advisory Board.

The hearing on the Maryland Occupational Safety and Health Advisory Board on draft regulations to prohibit smoking in places of employment is called to order.

I would like the members of the Board to introduce themselves, but first I'd like to welcome Henry Koellein, Jr., Commissioner of Labor and Industry, and ex officio member of the Board, and acknowledge our appreciation that he is with us today. Mr. Koellein is seated at the table.

MR. KOELLEIN: Good morning.

CHAIRMAN MARSHALL: I'd like to ask the Board members if they would introduce themselves.

MS. deSILVA: I'm Shirin deSilva, Department of the Environment.

MR. BEHRINGER: Bert Behringer, representing industry, Westinghouse.

MR. QUIDAS: Ed Quidas representing agriculture.

MR. LAWSON: Robert Lawson representing general industry.

MS. GILFORD: Barbara Gilford representing the public.

MR. SNEAD: Mike Snead, I represent the district regulated by the Maryland Public Service Commission.

MR. NOBILE: My name is Bob Nobile and I represent organized labor in the state of Maryland.

CHAIRMAN MARSHALL: Thank you. I would also like to recognize at this time Nancy B. Burkheimer, Assistant Secretary of the Department of Licensing and Regulations, and express our appreciation for her interest in this issue. Also with the Board today, includes Ileano O'Brien, Deputy Commissioner of Labor and Industry; Carolyn West, regulation coordinator. Also with us this morning from the Attorney General's Office is Assistant Attorney General Elaine Patrick.

Individuals will be called to speak in the order that they registered to speak with the exception of those instances where the Board has been asked to make

accommo-dations for travel and other commitments on the part of some our speakers.

To allow an opportunity for all present to present their points of view, we will allow each registered speaker five minutes in which to make his or her presentation. We certainly encourage those of you who speak to present your position in a concise manner, and conform to that limit.

Ms. West will monitor the speakers, and I would ask that 30 seconds before you finish speaking she notify you.

We do understand that, because of the nature of the issues being considered, complicated scientific data maybe will be discussed by some present. When this occurs, reasonable efforts will be made to allow for those facts to be presented. In line with that, we have two groups, one represented by Mr. Bereano, and four other persons representing the other group.

These groups will be allocated one hour in which to make their presentations if they so desire.

When called by Mrs. West, come forward to the

table directly in front, state your name, affiliation and address.

I would like now to call on Carolyn West to provide information on the legal notices as given and testimony received to date.

Carolyn?

MS. WEST: The legal notice of this hearing was published in the Baltimore Sun on November 8, 1993. Notice was also given in the Maryland Register, Volume XX, Issue XIV, on November 26, 1993. Notice was also sent, together with the survey form soliciting information on current company policies to about 150 employers selected from across the state.

For the ease of reference and to create a full record of the regulation adoption process, I have prepared a list of all exhibits and ask the Board to accept the exhibits in this manner. The exhibits have been marked into the record by the Court Reporter prior to the hearing, and members have a list of the exhibits in the packet.

At this time, I'm calling Mr. Bereano's group to

begin.

MR. BEREANO: Good morning, Mr. Chairman, members of the Board. For the record, my name is Bruce Bereano, an attorney in Maryland. I have offices here in Annapolis, and I'm here on behalf of and representing the Tobacco Institute, which is a trade association in Washington, D.C., of the manufacturers of cigarette and tobacco products.

Thank you very much for this opportunity to appear before this Board to testify on this proposed regulation by the Department of Licensing and Regulation of this Board, and thank you for the time you have allotted us to appear in a panel format in this regard.

I would like to just introduce the people at the table here and then have them make a presentation. Hopefully, each of you has the documentation that we have given each panel member, and additional copies for Ms. West and those other panel members who are not here today, and we'd be glad to make other copies available.

It consists of three parts, a blue-bound document,

Volume II, which is sort of a light gray colored document, and then a copy of a survey conducted on behalf of the Maryland Retail Merchants Association concerning this question recently and the results of that survey to the consideration of this Board.

To my right, the panel members are as follows: Mr. David Remes, who's an attorney with Covington and Burling, which is counsel to the Tobacco Institute.

To his right, Mr. Patrick Tyson, who is also an attorney, a former high ranking official with the United States Occupational Safety and Health Administration.

To his right, Dr. Gori, who is a health policy consultant, a Ph. D. doctor.

To his right, Mr. Steven Parrish, Esquire, who is general counsel and senior vice president for external affairs, Philip Morris, USA.

And to his right, Mr. Simon Turner, who is a director of the Healthy Buildings International, a company that has been very involved in this issue area.

I first would like to call on Mr. Costello to

begin his presentation, who is with the Maryland Chamber of Commerce who would like to make some initial remarks.

Thank you.

Mr. Costello?

MR. COSTELLO: Thank you, Bruce.

Very quickly, the business community in general is represented by the Maryland Chamber of Commerce, would like to express its concern about the appropriateness of a regulation applying only to Maryland that would set up essentially an enforcement mechanism that would affect employers relative to smoking in the workplace.

While it's easy to understand why the people who are involved and responsible for and very caring about safety in the workplace would want to address this issue, we feel very strongly that employers have been and will continue to be responsible and responsive to the desires of their employees.

There are so many different types of work places and types of employers, that we feel it's absolutely impossible to set one rule that's going to affect

everyone, especially one that's likely to have punitive results where you have a personal habit being regulated by a state and the employer is essentially subject to fines.

The Chamber has consistently opposed any regulation that exceeds federal regulations. Since MOSH is based on a federal law and responsible to that, we feel that it would be inappropriate for Maryland law to try to exceed the federal requirements, of which there are none that I know of.

If we could make a positive suggestion, it would be that this Board do as some groups do, conduct a meaningful survey to find out what is going on in the workplace and how this matter is being handled. And we feel that you'll be satisfied that the appropriate actions are being taken.

I'm glad to answer any questions.

CHAIRMAN MARSHALL: Thank you, Mr. Costello.

MR. BEREANO: Thank you, Mr. Chairman. I'd like to call on Mr. David Remes to commence our testimony. Thank you.

MR. REMES: Mr. Chairman and members of the Advisory Board, my name is David Remes. I'm with Covington and Burling. We're counsel to The Tobacco Institute, and I'd simply like to make a few general observations and then turn the discussion over to my colleagues on the right.

The first thing I'd like to say is that as I understand it your role is to decide whether or not to recommend a standard or a regulation to the Commissioner.

Our position is that no standard should be recommended.

The one that has been issued as part of your notice is surpassingly broad in its sweep. It would make employers responsible for the behavior of their employees regardless of whether they can exercise control over the behavior of their employees. It would apparently apply to smoking by employees at outdoor work sites. It would apparently apply even to employees who were working by themselves or with other smokers.

In effect, it's a nine-to-five rule, when you're working you cannot smoke, regardless of when, where, or under what circumstances, it more or less treats the smoking employee himself as the occupational hazard.

We believe that it's inappropriate for the state OSHA to regulate in this area and would be wasteful for it to regulate in this area. Federal OSHA has begun consideration of indoor air quality issues. It has expertise and resources to make the necessary determinations to decide whether or not regulation is warranted in this area. Any action by Maryland OSHA would, at best, duplicate that effort, and it's unlikely that it could actually proceed at a much faster pace.

In addition, it's somewhat ironic that the Maryland Legislature has held oversight hearings on these issues just this past fall because there's a great deal of interest in Annapolis in considering what balance to strike on workplace smoking and public smoking issues generally. It's an issue that has been a concern of the Legislature for a number of years.

It's adopted a number of laws regulating smoking, and, as I say, it's preparing to reconsider the issue again in 1994.

It's a peculiarly legislated issue at state level, calling, as it does, for the balancing of many competing interests and considerations.

The last point I'd like to make is that I'm sure it will be said later on that a work place smoking ban makes "good business sense" in light of the supposed threat that employers face and businesses face from liability claims by nonsmoking employees.

I think that the testimony of the Chamber of Commerce should suffice to dispel the notion that business needs this kind of protection.

But beyond that, I would call your attention respectfully to the statement that we've included in our submission by Victor Schwartz of Crowell and Moring, who is a product liability expert. This is the statement that he submitted to the legislative hearing in September which explains why there's no serious threat of liability claims by nonsmoking employees

under state Workers' Compensation laws.

It's at tab 10 of the notebook that Mr. Bereano has compiled -- or under the Americans with Disabilities Act where the one federal court that I think has decided a workplace smoking claim in federal district court in Virginia recently rejected the suggestion that the ADA requires a smoke-free workplace, and the number of federal courts have reached similar conclusions under the Rehabilitation Act.

With that, I would like to turn the floor over to Mr. Patrick Tyson who will address the legal prerequisites of action by Maryland OSHA, and then we'll proceed down the line.

MR. TYSON: Thank you, David.

Thank you, Mr. Chairman and members of the Board.

My name is Pat Tyson. I'm an attorney in private practice in Atlanta, Georgia, and I represent Philip Morris in a variety of OSHA and employee safety and health related matters.

Obviously, this is one of those matters.

Quickly, I wanted to give you my background. I spent 13 years in Washington, D.C., with the Occupational Safety and Health Administration in Washington, left there in 1986, and since that time I've practiced exclusively in the area of occupational safety and health law.

I'm very familiar with the standards promulgation process and the legal requisites that are applied in that process and would like to address some of those issues now. I would also like to make the point that -- and I'd encourage you to check this -- that in my tenure at OSHA and since, I've always been a strong supporter of state programs.

As a matter of fact, the Maryland OSHA program received its final approval under me. And I don't want you to take any of the comments here today as an indication that we feel that there are failures on the part of the OSHA program here in Maryland or that the expertise and professionalism of this agency is questioned by us in any way. That is not our intent or our point.

But I do want to raise two legal issues that I think this Board should give serious consideration to with respect to this proposed regulation. Those two legal issues are the requirement for a showing of significant risk before any regulation can be issued and the requirement of what we call the "products clause" restrictions in both the Maryland law and the federal law.

And I don't want to go into the legal argument here, but I do want to make a few points and we've submitted extensive documentation of these, which I apologize for, but I did think it was important to get all the facts before you.

The first point I want to make is that the law in the state of Maryland and the law federally under the Federal Occupational Safety and Health Act with respect to the promulgation of standards is essentially identical. The language is almost word for word the same.

Therefore, we look to interpretations of federal law for determining how state court hearings in

Maryland would interpret the same language because Maryland courts have never been called upon to address this particular language. There are Maryland cases that have shown that where a state law and a federal law essentially say the same thing that the Maryland courts will be bound by the federal court's interpretation.

The federal courts have extensively interpreted the language in the Federal Occupational Safety and Health Act with respect to the promulgation of standards. The lead case is a case known as the API versus AFL, CIO which we generally refer to as the Benzene case, and it was a case decided by the Supreme Court in 1980.

This Court was asked to review a regulation by federal OSHA which had the effect of saying that there was no safe exposure to benzene in the workplace. The standard would have taken the current or the then current permissible exposure of 10 parts per million and lowered that to one part per million. The standard would have also mandated that there be no dermal

contact with benzene.

In looking at the issue, the Supreme Court of the United States said that OSHA under this language, in the same language that applies here in Maryland, is not free to regulate with restriction, that in order to regulate there must be a finding of significant risk to material health of an employee based upon exposures in the workplace. In absence of such a showing, the agency is not free to regulate.

There is extensive language in the decision about how Congress did not envision a risk-free society and that the achievement of a zero risk is an impossible goal and one that clearly is not given to OSHA in the language in the statute.

Therefore, OSHA ever since that decision has gone through a process of what is determined to be a risk assessment before a standard is issued. In conducting a risk assessment, the agency looks at the scientific data that's available on the substance in question, and they attempt to determine what would be a dose response, how much of this substance in terms of how

much exposure to this substance would result in what sort of adverse health effect.

And then they apply that to the actual exposures permitted in the workplace, and from that equation make a determination of whether the risk in the workplace is significant. They have used as their guideline in making that determination a risk of one in 1,000. In other words, where OSHA has found that there is a risk of one case of cancer or one death, in 1,000 exposed employees, that that means the risk is significant and that, therefore, they are able to regulate.

What we have before us here and what the Board is currently considering is a proposed regulation which, in essence, would regulate all risk, both significant risk an insignificant risk and, therefore, we submit that on its face this proposed regulation would not meet the requirements that are set out by the United States Supreme Court in the Benzene case.

The second legal issue that I want to turn to is as I referred to earlier "the product clause limitation."

MS. PATRICK: Mr. Tyson.

MR. TYSON: Yes, Elaine.

MS. PATRICK: Is it your view that that is a binding precedent?

MR. TYSON: Yes. That decision has been followed by the Supreme Court itself in the Cotton Dust case and by several U.S. Courts of Appeals in the review of many other federal standards.

MS. PATRICK: It was adopted by OSHA in 1990, wasn't it?

MR. TYSON: The cancer policy?

MS. PATRICK: Yes.

MR. TYSON: The cancer policy was adopted in 1980 and it was administratively stayed.

MS. PATRICK: OSHA got itself there between 1 and 1,000; is that right?

MR. TYSON: That, and in every rule making on a toxic substance since the Benzene decision came down.

MS. PATRICK: 1 in 1,000 is a significant risk.

MR. TYSON: That isn't the case. They look not only at carcinogenicity, although that tends to be the

major issue, but they look at material impairment of health.

The 1 in 1,000 came from the Benzene case. It was used as an example of what a significant risk might be. The Court in that case used an example saying that the risk of 1 in 1 billion would be considered by everybody as insignificant; whereas, a risk of 1 in 1,000 would be considered significant. Taking advantage of that language then, the agency has used that as their guidelines since that time.

MR. SNEAD: Mr. Tyson, the Benzene case I confess it's been awhile since I read it, but I understand that you said 1 in 1,000 was given as an example. Was it the intention of the Court to set that as a level of significant risk or are there other levels which could be used in determining significant risk, depending on the situation?

MR. BEREANO: The language of the decision, at least in my interpretation, does not say that that is a mandatory significant risk factor. It's suggested as an example and as we pointed out, was the level that

had been used -- has been used by OSHA federally since that time.

The next legal issue is what we call the products clause limitation, and this language appears in two contexts. There are two contexts in which I wish to discuss it.

The first is in the context of the Maryland law, the Maryland OSHA statute picks up this language, and I won't read it to you but, basically, what it says when you have it before you is that where the state seeks to promulgate a standard which applies to a product as it's used in interstate commerce, that the standard must be based upon compelling local conditions and not be an undue burden on interstate commerce.

That's the language in the Maryland law.

The federal law is a little bit different in this sense. The federal law requires that all state standards be approved by federal OSHA, and in that context, in the approval process the federal OSHA would use, that limitation is included.

So that federal OSHA, in the process that they

would go through in approving a state standard, would look to the issue of whether the standard applies to a product that moves through interstate commerce and, therefore, is it based upon compelling local conditions?

There have been very few examples of the application of that policy or -- excuse me -- of that language in the years that I've been associated with OSHA. As a matter of fact, I'm only aware of two or three. One case involving the state of Washington which attempted to have a standard that would require an additional braking system on tree-trimming trucks and a standard in the state of Oregon which attempted to require that hammerhead cranes have a wind speed indicator on that crane.

When OSHA looked at those two issues, they came out with a different decision on each case. With respect to the tree trimmers in the stage of Washington, the federal agency basically found that there was no difference in the mountains or hills in the state of Washington than anyplace else so that

there was no compelling local condition.

But in the state of Oregon, the high winds that occasionally occur in the Snake River Valley made a wind speed indicator a compelling local condition, or met the compelling local condition of the case.

We would submit that the issue of environmental tobacco smoker or smoking here in the state of Maryland would be no different than it would be in any other state, and that it would be very difficult for the state to demonstrate compelling local conditions.

I want to close with a comment about federal OSHA, and I suspect we'll hear more about it as the day goes on, but let me say that I believe that federal OSHA is going to act on the issue of environmental tobacco smoke, probably as part of an overall rulemaking on indoor air quality.

We submit that that is the more sensible approach to the issue and one that I think will satisfy the concerns, not only with respect to environmental tobacco smoke, but many of the other substances which cause problems with respect to indoor environments.

Federal OSHA has started this process through a request for information issued over a year ago that resulted in what I believe to be the largest record ever -- one of the largest, if not the largest, record of evidence ever as a result of an OSHA request for information of advanced notice of proposed rulemaking.

OSHA is in the process of developing their recommendations for action on that subject. They have put the issue on their regulatory calendar. Both the current Secretary of Labor and the previous Secretary of Labor have indicated that the issue is a high-priority for them and I fully expect them to move ahead.

It's a very complicated process. The issue of determining a risk assessment to support regulation is a tough thing to do, one that even federal OSHA has difficulty with, and they frequently have to hire outside experts to help them in that process. In fact, recently OSHA issued two contracts to outside experts to help them in exactly this process.

So I would urge this Board to look to federal OSHA

as to what it is doing and is intending to do, and I think that a prudent course of action, once you take a look at that activity, would be to let federal OSHA do this one.

Thank you very much. I'll be happy to respond to any questions.

CHAIRMAN MARSHALL: Thank you.

MR. SNEAD: How would the regulation of tobacco smoke place an undue burden on interstate commerce?

MR. TYSON: The key is the compelling local condition. The test is to require -- you have to meet both of those tests, and while you may be able to demonstrate that it's not an undue burden because, you know, that's a sliding scale, the question of a compelling local interest, to me, would be one that would be impossible to show.

I don't know how the compelling local conditions in Maryland wouldn't also take place in Virginia or any other state.

Thank you, Mr. Chairman.

DR. GORI: Mr. Chairman, ladies and gentlemen, I

am Gio Gori. I'm a toxicologist and epidemiologist in private practice in Bethesda, Maryland. My resume is attached to the written submissions that you have in your hands.

I am president of the International Society for Regulatory Toxicology and Pharmacology and a fellow of the Academy of Toxicological Sciences.

The Tobacco Institute asked me to comment on the scientific issues regarding the environmental tobacco smoke, which I shall call ETS.

My views are my own and not necessarily those of the Tobacco Institute.

Now, when we talk about science, you have to keep in mind that science is not all established knowledge. Much of science is hypothesis, the stuff of research, namely knowledge in search of verification.

I believe that one of the issues in front of you is to decide whether fair policy can be, in fact, established on the basis of hypotheses in search of verification or whether they should be established on the basis of fact.

The EPA report is a difficult one and, as you know, is probably the basis for much of the interest in ETS around the country, and I believe around this room as well. I will focus my comments on the EPA report, therefore.

It relies on the assumption that ETS is equivalent to the smoke that smokers inhale and it relies on the claim that immunologic studies, studies in people, have shown that there is an increased risk of lung cancer for nonsmoking wives of smoking husbands.

Incidentally, it's going to be difficult for me to address all the technical points in five minutes that have been allotted to me and I would hope that you take the time to read my written submission which contains in far greater detail and all the necessary references to my statements here.

And, incidentally also, I will not serve you with my opinions. All the things that I'm presenting now and that are written in my statement are really matter of fact, facts that can be verified by the references that I provide and do not represent my opinion.

The issue of the similarity of ETS with the smoke the smokers inhale is a straightforward one. They are not the same thing. The smoke that smokers inhale is quite different. They may all derive from tobacco, but the end result is quite different.

There are about 4,000 components that would be measured in mainstream smoke which has a life of a few seconds in the throat and in the lungs of the smoker. On the other hand, ETS, environmental tobacco smoke, comes from the smoldering of the cigarette, not necessarily from what the smoker inhales, and, of course, if it stays undiluted in the air, aged over a period of hours and diluted a hundred thousand, a million-fold greater than the smoke that smokers inhale.

During this process, ETS ages, interacts with the environment -- with oxygen, with air, with a number of other substances present in the environment. And the end result is that you have a very diluted smoke and you really cannot characterize the thing.

There are only about 20 components that we have

been able to measure analytically and are treated into ETS under field conditions. So that to say that ETS is equivalent to the smoke that smokers inhale really requires a proxy that is not scientifically justified. It's still in hypothesis; in other terms, in not-established fact.

The ETA itself shows that in the course of an entire year the average person exposed to ETS may inhale less than the equivalent tar of one single cigarette.

These are data that you can garner from the EPA report itself.

Now, because of these vanishes dilutions, therefore, the equivalency of ETS and smoke that smokers inhale cannot be made on the vaguest of conjectures.

In fact, the EPA report itself equivocates on this issue. In one section it says that your equivalency is certain; in another section it gives you all the reasons why the equivalency cannot be sustained.

Among the epidemiologic studies -- and I have the

resume, the summaries of the epidemiologic studies in three charts that are attached to my written submission which I urge you to see -- we have 13 studies of exposure in the workplace, which, combined, do not show any relation of risk.

This combines two of the largest studies done to date -- the two studies that were not included in the EPA report, by the way -- which state categorically that they could not find any increase of lung cancer for the workplace exposure.

Thirteen studies.

The combined evidence does not show an increase of risk of workplace exposure. There are 23 studies of exposures since childhood. The combined evidence of these studies also shows that there is no increase of risk for lung cancer.

Keep in mind also that the EPA and most of the scientific community believes that children are particularly susceptible, yet 23 studies of childhood exposures to ETS do not show an increase of risk for lung cancer.

What the EPA did was to select about 11 studies conducted in the United States, studies of nonsmoking wives exposed to the smoke of smoking husbands. The studies are all over the place. The chart also is included in my submitted statement here and, in the words not of myself but of the International Agency for Research of Cancer, the results are compatible with either an increase or a decreased risk.

The fact is that the data can be interpreted on all sides.

The reason of this difficulty is that it is practically impossible to define exposure to environmental tobacco smoke. First of all, you have to refine the exposure not at immediate moment of measure but the exposure that these people with lung cancer allegedly suffered over a period of 20, 30 years before the diagnosis. It's very difficult, if not impossible, to go back and try to measure what actually people were exposed to.

The other problem is a problem of misclassification. There is very substantial and

strong evidence today that some people with lung cancer tend to lie about their smoking habits, which is understandable. It's about between 5 and 10 percent of people with lung cancer that declare themselves to be nonsmokers are, in fact, smokers.

How we do this, we go back and we either interview the next of kin or we do analysis of carbon or nicotine in the blood and there are at least a dozen studies now out in the literature which clarify and demonstrate that, in fact, this is the average rate -- 5 percent, we would say -- of people who declared themselves to be nonsmokers and, in fact, are smokers.

Now, the EPA arbitrarily assumed that this rate was 1 percent and, therefore, came up with a very slight,.19, 19 percent increase of cancer risk. If you actually use only a 2.5 percent, which is far below the average measure of 5 percent, this disappears altogether.

Now, I'm not trying here to day that there is no risk whatsoever with environmental tobacco smoke. I'm simply going to tell you, and I'm telling you, that the

evidence that we have is so volatile that no conclusion can be reached at this particular point. The only conclusion that could be reached is that if there is a risk, it's so small that it cannot actually be measured.

I don't want you also to interpret my words when I say that some of the epidemiologic studies show that there is a decrease of risk; namely, an apparent protection. I don't want you to interpret this as me suggesting that, in fact, smoking or exposing oneself to ETS implies a protection from lung cancer, but these are the data that you see.

Now, EPA has not conducted any studies of their own. These are all studies conducted by someone else. They claim to have used to weight-of-evidence approach. In fact, they were very selective in picking their studies and their procedures for analyzing the studies. There are other studies, of course, implying cardiovascular disk risk and respiratory disease risk, but I believe that the evidence for this risk is even more tenuous than evidence that we have in the case of

lung cancer.

In other words, the EPA report may be an effective policy instrument, but it cannot lay scientific support. A blue-ribbon panel convened by the EPA itself concluded that independently. They concluded that all too often the agency bends science to suit preconceived policy aims.

Surely EPA must think that ETS and tobacco smoking are legitimate public health issues, but the question is, does the end justify the means? Does the end justify utilizing bogus science essentially?

Should good intentions forgive official reports that otherwise would guarantee censure from any academic institution in this country?

These, Mr. Chairman and ladies and gentlemen, are not partisan questions in defense of the tobacco industry. They obviously reach far beyond the ETS issue. Ultimately, their answers will determine the credibility of civic institutions that claim to develop policy on scientific grounds.

This, Mr. Chairman, concludes my statement, and

I'm ready for your questions.

DR. deSILVA: The impression that side-stream smoke is questionably as potent as directly inhaled smoke. In point of fact is more potent than directly inhale smoke.

Second, you failed entirely to address the issue of the association of asthma and ear infections in children of smokers which -- and the epidemiological evidence there overwhelmingly is associated with smoking.

Now, would you like to address the epidemiological issues there?

DR. GORI: I have addressed them in my written submission, Dr. deSilva. As far as the great importance of ETS, I don't know that that's a scientific fact. There's an assumption that people have come up with. Nobody has yet been able to test ETS nor to characterize --

DR. deSILVA: Certainly it has been tested. There have been tests on this.

DR. GORI: Not of ETS. Dr. deSilva, there have

been tests of side-stream smoke, namely the parent of ETS, if you wish, but not aged ETS. No one has data about what happens to the aged ETS after it gets transformed, environmentally and otherwise, so the assumption that ETS is more potent than main-stream smoking is really an assumption that is still in search of verification. It's an hypothesis.

The other issue, of course, is that we have a dilution here of perhaps 100,000 to 1 million-fold, so you also have to come up with --

DR. deSILVA: It depends, of course, on how much accumulates in a given area. As you know, the airlines have banned smoking on short flights.

DR. GORI: Yes.

DR. deSILVA: Because it does, in fact, accumulate in their workplace.

DR. GORI: Yes, but the accumulation is still a question of hundred thousand or more full dillution compared to main-stream smoke. You cannot make a comparison on any grounds. You have to realize that a lot of these regulations that we have are based on

political decisions rather than on scientific ones.

Science never really justifies these decisions on an objective basis. You don't have data.

DR. deSILVA: Certainly I agree that the lack of regulation of smoking in the workplace and in the United States in general has heavily been influenced by politics.

DR. GORI: I'm not a politician, so I will not comment on that. I am trying to present to you some of the facts. This doesn't mean that this Board here cannot go on and regulate tobacco smoke in environmental tobacco smoke in the environment, but if it does so it will not do it on scientific grounds nor will it be able to demonstrate that regulating ETS in the work place will produce any benefit to the smokers or to the worker.

MR. SNEAD: Dr. Gori, what would be the effect of this classification of exposure on the risk estimates? Would it tend in one direction or the other?

DR. GORI: Well, certainly when you have people with lung cancer who declare themselves to be

nonsmokers and, in fact, are smokers, this would tend to increase the apparent risk. So if you correct for the percentage of misstatements -- I don't want to call them liars -- then the risk disappears. If you use 2 1/2 percent correction -- which is far below the average 5 percent that all studies suggest is the actual misstatement rate -- the EPA risk evaluation disappears. There is no risk anymore.

If they use the 1 percent that they have used, then, of course, you have a slight increase of risk, but this is due, again, primarily to the misclassification not accountable to misclassification.

MR. SNEAD: Of the 20 measurable compounds that you say that you can find in environmental tobacco smoke, re any of them known carcinogens?

DR. GORI: I don't recall now. Say that some of them could be, but, of course, you have also to figure out what is a carcinogen? Are they carcinogens in animals, are they carcinogens that have been declared carcinogenic by the EPA itself, or do we have epidemiologic evidence in humans that, in fact, they

are?

I suspect that some of them might be human carcinogens at the second level, but again, the exposure to these compounds is thousands, hundreds of times below what is permitted in the workplace by the Occupational Health and Safety Administration even though they may be considered and classified as carcinogens by the EPA.

MR. PARRISH: Mr. Chairman and members of the Board, my name is Steve Parrish. I'm Senior Vice President and General Counsel of Philip Morris, Inc., in New York City.

I'm here today to address the Board in all good faith, and I appreciate the opportunity to appear before you. I'm more than willing to answer any and all questions, and I hope that you will listen to what I have to say with an open mind because we are seriously concerned about this issue.

Philip Morris Companies is the largest consumer packaged company in the world. Our subsidiaries include Philip Morris, USA; Philip Morris,

International; Kraft General Foods, the largest packager and marketer of packaged grocery coffee, cheese and processed meat products in the United States; Miller Brewer Company, which is the second largest brewing company in the world.

We produce brand-name products such as Maxwell House, Sanka, Jello, Marlboro, Virginia Slims, Kool-Aid, Kraft Cheese products, and the list goes on and on.

So I'm really here today not only as an executive of a large tobacco company but as an executive of a major employer in this country we employ more than 100,000 people in this country. We have facilities in every state in the country. We have 12 facilities in the state of Maryland and more than 500 employees in the state of Maryland.

So we are seriously concerned about the issue, not only of smoking because we are, in part, a tobacco company, but because we are a major employer and we care about our employees, and because we maintain and own buildings in this state and throughout the country.

I wanted to take just a moment and mention a couple of things about the lawsuit that my company, along with R. J. Reynolds Tobacco Company, a large group of tobacco farm families, and representatives of the retail community have filed against the Environmental Protection Agency.

Dr. Gori has spoken in some detail and in greater detail in his submission about the Environmental Protection Agency's risk assessment on environmental tobacco smoke. I did want you to know that we have filed a lawsuit. There are three basic claims in our lawsuit.

First, we claimed that the risk assessment conducted by EPA goes beyond the authority given EPA by federal law. That EPA violated its own internal guidelines in conducting the risk assessment. That EPA ignored sound principals of science, as well as sound principals of government in public policy in conducting and releasing this risk assessment.

Possibly most egregious in my mind, as Dr. Gori alluded to, is the fact that two very recent, very

large studies were omitted because, I believe, if the data from those studies had been included it would not have been consistent with EPA's predetermined conclusion regarding environmental tobacco smoke.

Furthermore, as Dr. Gori has said, there is data in the scientific literature on risk and workplace exposure. EPA did not properly address that issue; in fact, that issue is basically ignored by EPA.

My company's policy is a policy of accommodation and by that I mean more than just common courtesy between smokers and nonsmokers. We believe as a responsible employer that we have an obligation to provide our employees with an appropriate working environment, and we believe and we recognize that nonsmokers have reasonable interests in not being exposed to environmental tobacco smoke if they don't want to be.

We also believe that smokers have reasonable interests that should be accommodated and our corporation worldwide we try our best through ventilation technology, through accommodation of the

interest of both smokers and nonsmokers, to deal with this controversial issue.

I think really the last thing that I want to say is that, again, we recognize that the issue of smoking, whether it's in the workplace, in public in general, is a very controversial one that a lot of people have very strong feelings about it. Again, I appreciate the opportunity to come before you and be a part of this presentation which, hopefully, is an objective, balanced presentation about the issue.

And I hope that those who follow us on the program will try to do the same thing, and I would ask you -- I know that many times a lot of people think that a tobacco executive does not have a lot of credibility when it comes to health issues. I would say to you, I understand your position, I understand your feelings, and I welcome your skepticism, but I would hope that as you listen to everybody, the people at this table as well as the ones who follow, please listen carefully to what is said and approach all of the presentations with equal skepticism.

The reason we are here as a company is because we want to be a part of this process, and we believe that if people listen to the data and ask as many tough questions to all the presenters that this Board will come to the right decision.

Thank you very much, Mr. Chairman.

MR. TURNER: Good morning. My name is Simon Turner. I'm the Director and Technical Manager of a company called Healthy Buildings, International.

Again, as Dr. Gori mentioned, I am also here at the expense of the Tobacco Institute. They are our clients of ours and however I should add that the views expressed this morning are absolutely my own and they're based on our own research and opinions that we came to long before we ever started work with the Tobacco Institute.

Our primary role as indoor air quality consultants is actually going in and looking at real buildings, inspecting buildings for indoor air quality. We do this in three ways.

The first way is to look at buildings that have

indoor air quality problems. Obviously, there are so-called "sick" buildings, and we go in there and we diagnose what the problems are and how to restore the building to "health" if you like.

The second thing we do is -- and the preferable way to do this is to do it proactively, preventatively, and we run hundreds of monitoring programs in this state and all over the country with property management clients on a preventative basis, usually on a six-month basis we go in and inspect the buildings and try to identify a potential for indoor air quality problems.

And the third thing we do, which is the most preventative of all, is work with architects and design teams on brand new buildings, not that there are may being put up these days, but those that are we work with them to help prevent indoor air quality problems at the design stage because sometimes that happens too.

We have literally hundreds of clients, both in the commercial and public sector, from GTE, Pepsi, Union Carbide, United Nations, Architect of the Capital, Federal Reserve banks around the country, the Housing

and Urban Development (HUD), and we've been doing this now for 12 years, and we've made initial inspections of about 1,000 major buildings in this 12 years.

And you can imagine that we see a lot of indoor air pollution, different indoor air pollutants, and they range from fungi to dust to humidity -- both high and low, bacteria, formaldehyde, fibrous glass, car exhaust, volatile organic compounds that let off gas on carpets and new furnishings and this kind of thing, and, of course, tobacco smoke and ozone.

They're all there, and at the relatively complex mixture, and we have to understand the issues connected with all these different pollutants.

We found tobacco smoke to be a problem creating specific problems in about 3 percent of the buildings that we'd look at. But you should also be aware that fungus growing inside the air-conditioning system, there's been a problem in about a third of the buildings that we've looked at.

But whatever the proportion is in terms of how often we find problems with these different

constituents of indoor air, you have to ask why any of them are accumulating in the building in the first place.

There are three main -- well, there's one way you can look at it and break it down into three main building systems, reasons if you like.

There's ventilation. In fact, about a fifth of the buildings that we've looked at have been operating with no outside air. They're just recirculating the same air, usually not by design but simply by operation.

We find filtration problems. Air conditioning systems aren't being filtered properly and that often leads to dirt building up inside the air conditioning systems and in the duct-work, which, in turn, leads to microbe problems within the building.

So in a way you can begin to see how a "sick" building can occur in the first place. There's no ventilation. The filters aren't working properly. Dirt builds up. Dust and pollutants begin to circulate through the building until they get to levels where

they begin to irritate people, and that's very often what is all that a sick building is.

What we try to do -- and it's important that we understand this -- is work with property managers, who can do an awful lot to prevent these problems, and we work constructively with them to educate them, and also their tenants. We have to remember that there are many things that tenants themselves do that can create indoor air quality problems in buildings.

And we regard a lot of the work we do in education in that way, and if you want good indoor air quality, if that is your goal as you regulate, this should be your focus. Look at what allows all these pollutants to build up in a building in the first place.

We've heard somebody much more qualified than I am to talk about OSHA but from a practical standpoint, what I'm going to bring home the fact that OSHA, permissible exposure limits do not require complete absence of the substance in indoor air. It's to look at the asbestos case wherein we have .25 per cc, I believe, is the permissible exposure limit for

asbestos. If you take a typical office building that we work in, maybe 100,000 sq. ft., it's very easy to calculate that you can have up to 5.5 billion fibers of asbestos circulating through that building and it will still be considered acceptable as far as OSHA is concerned.

And yet what we have here, we've got total ban proposed for ETS. We just have a few molecules of ETS in the building and it's grounds for evacuation of the building, and it's one way to look at it which shows that there's not necessarily a need for a complete absence of a substance for it to be acceptable in terms of comfort, at least.

When we go into these buildings, people have often said to us, well, you never actually recommend smoking bans. Well, what we do is work with property managers to find a policy that suits their tenants and everybody in the building, including something that the property manager themselves are comfortable with.

And there's really a wide range of options absent as a complete ban which will work in most buildings.

They range from simple separation to some way where you set the air conditioning up so it's balanced so the nonsmokers aren't directly exposed to the smokers, all the way to a designated smoking area, which is properly exhausted with the right amounts of outside air drawn into that area then exhausted directly out of the building.

And each building can be looked at by the employer and he can decide on a policy that suits him. It's certainly been my experience that it's something that employers seem to be able to deal with pretty much themselves in terms of finding out what's the best policy for their workplace.

To finish, we have to also understand that sick buildings don't appear to be going away. We've seen a lot of so-called "Clean Indoor Acts" appear around the country. These clean indoor air acts, when you look at them more closely, are simply restrictions on smoking, and we still see, despite the clean indoor air acts, sick buildings being evacuated by absenteeism, school children getting sick, all in buildings where there is

no smoking, where smoking has been banned.

The classic example is the EPA's own building in Washington, D.C., perhaps the most notorious sick building in the world. They have people demonstrating outside the building complaining about the air quality in there and they haven't allowed smoking in that building for years, and there's a lawsuit ongoing about that.

So really what we're asking is that we treat the cause of indoor air quality problems, not just visible symptoms that are very recognizable like second-hand smoke. If we address ventilation, hygiene, education, we find it's a much more cost-effective route to indoor air quality than just hanging out the no smoking signs.

I'll be glad to answer any questions. Thank you.

CHAIRMAN MARSHALL: We'll have some questions from the Board. I would just like to acknowledge the presence of the Secretary of Licensing and Regulations, William A. Fogle, Jr., who is in the back. I just wanted to acknowledge his presence.

We will now have questions from the Board. May I

make just one request, that we give, as much as possible, concise answers to the questions raised.

MR. BEREANO: Sure, and we do have one other speaker on the panel that's signed up, a legislator.

MR. LAWSON: I have a question and your focus has been primarily on the health effects of side-stream environmental smoke. One aspect of the proposal to initiate this regulation was on the heels of multiple fatalities of three workers smoking, working with flammable substances, stripping a gymnasium floor.

As Mr. Tyson certainly can realize, there are several OSHA standards, asbestos, arsenic, that ban smoking in those regulated work areas, and part of those standards require good personal hygiene aspects when these workers exit those areas, and Mr. Parish over there, I think, is a major employer and probably has these types of regulated areas.

The problem is the isolated employees who sneak the smoking products in despite employer regulations and violate these. Unfortunately, the health aspects, other than maybe acute exposure an individual employee

does not make the news media. More dramatic fatalities from the smoking explosion generated type of incident does do this.

Does the Board have any comments in the area about the employer's rights to regulate the smoking across the board to insure that the isolated employee incidents can be controlled? This is a problem that I think you've seen in your inspection process with the federal agency. The state has seen this in their compliance efforts. It's a very difficult aspect to control.

There are some employers that are looking very quietly hoping that some regulatory agencies do do this to take them out from being the posture of the bad guy.

MR. TYSON: As you correctly point out, there are a number of OSHA regulations which currently restrict smoking, and I suspect that there may well be a regulation that would have restricted smoking or prohibited smoking in the situation that resulted in the tragedies several weeks ago.

So the question, therefore, is, why do you need

another regulation when the regulations you've got already prohibit the behavior? That's the short answer.

MR. PARISH: Just one additional thought. Yes, I agree with what Pat just said.

An additional concern that I would have is if we are going to impose a total ban restriction, that that, in fact, may encourage people to try to smoke in places where they won't get caught.

We've seen certain instances of that in the airline industry. We certainly understand why people on an airline, on a flight, should not be smoking in the lavatory. There have been instances where people have tried to go into the lavatory in a non-smoking flight and it's caused a real safety concern, so I agree with what Pat says that the way to do this is to look at the problem and not try to treat it on a global basis because you may, in fact, make it worse.

MR. REMES: And if I can put my two cents in, Mr. Lawson, it doesn't seem to me that this takes the employer off the hook. It really puts the employer on

a bigger hook.

DR. deSILVA: I would like to see a presentation on indoor air quality because that's a big part, and I agree with the cases involve other than ETS but I find that by the time they call in somebody to come help them out of their problem, they've already done the easier things like banning smoking, so you're given the smoke-free model to begin with. But what we still have an indoor air problem. Your 3 percent figure of indoor air quality problems are smoke-related. I mean, what is your percentage you have gone into are, you know, smoke-free to begin with before you -- I mean, before you go in at all?

MR. TURNER: It's certainly rising, the percentage of buildings that we find to be smoke-free when we go into them. Bear in mind that a lot of the work we do is preventative. We're not called in to -- I'd say -- anecdotal off the top of my head -- about half the buildings we initially go into have no problem perceived. We are asked to set up a proactive monitoring program. Property managers do that for many

reasons, not least of which is as a marketing tool to help attract new tenants and retain existing tenants in the building.

So many of the buildings don't actually have a perceived problem when we first go into them.

DR. deSILVA: I see. Another thing -- I mean, we find that balancing, trying to solve problems with buildings by balancing each air system doesn't work because it just -- I mean, even with 100 percent fresh air you're still getting the nonsmokers complaining.

MR. TURNER: It's difficult in the short time I had to explain exactly what I meant by that, but an example of where balancing can help is, as we've seen so many times, is where, as you know, many employers choose to have the cafeteria -- to locate a smoking area in that cafeteria, and we often find a building where a cafeteria has been set up and the cafeteria manager has arbitrarily said "that corner over there, that's where the smokers will sit," despite the fact that the exhausts are actually over there.

And all it takes is a little bit of careful

thought and an understanding of the way the ventilation systems work to better place a smoking area so that it in practice works more effectively and prevents nonsmokers from being irritated.

DR. deSILVA: But I find that you don't prevent the nonsmokers from being irritated; you merely decrease the problem. This must be your experience.

MR. TURNER: One of the major objectives is to decrease the problem.

DR. GORI: I have one word to that, Dr. deSilva. There is a reference in my submitted material here to a recent study. I don't remember exactly, but I believe it was a cafeteria, where they had a partition between smokers and non-smokers, and the nonsmokers didn't see any problem with the air quality until the partition was removed, until they could see the smokers on the other side.

So there are a number of psychological factors that enter here into the reaction of the nonsmoker.

MR. BEHRINGER: Were there two different exhaust systems on either side of the partition? Probably not?

DR. GORI: It was the same room, the same cafeteria.

MR. BEHRINGER: One and the same ventilation system?

DR. GORI: Well, I don't know exactly where it was. No, not really, not really. This was done not by the Tobacco Industry, by the way. It was done by a person that usually likes to fight tobacco and smoking and has the contrary studies in his reference in my material.

DR. deSILVA: Practically speaking those partitions do break up the air flow, so if you've got an overhead vent in the area and an overhead vertical structure --

DR. GORI: These were not ceiling partitions. They were simply blocking the view.

MR. BEHRINGER: Bert Behringer, Industry.

I'd like to direct a comment and question to Mr. Pat Tyson. You indicated that you felt the approach should be to leave it to the feds. I call your attention, and I stand to be corrected that my dates

might not be exact, but they're pretty close. I recall ending the National Safety Congress when your colleague Jerry Skanol addressed this question before 17,000 delegates, and he assured those delegates and the people of America that OSHA would have a smoking policy, if you will, before the end of the year. I'm almost certain that was like 1987. I stand to be corrected.

I'd like to also point out the fact that you indicated that --

MR. TYSON: Was it when he was Assistant Secretary?

MR. BEHRINGER: When he was just appointed. He was just appointed.

MR. TYSON: Yeah, that would have been late '87, okay.

MR. BEHRINGER: It may be '88, '87, but it's in that time frame. You indicated that you felt that OSHA's really working on this and we could expect a standard, you know, relatively soon. I address this to you.

As you well know, confined space only took OSHA -- listen to this -- 17 years to develop. I'd like to also call your attention to the state of Maryland through this Board had such a law because they couldn't wait any longer for OSHA in 1978. OSHA didn't come with their confined space until, what, two years ago.

MR. TYSON: A few months -- yeah, literally, right.

MR. BEHRINGER: So that makes you somewhat questionable as to your inputs earlier.

MR. TYSON: Two points. One is, obviously, the legal issues are still there, but in terms of the speed at which federal OSHA moves on regulation, I would lose all credibility if I stood up here and said that they move quickly.

(Laughter.)

MR. TYSON: But I do want to defend Jerry. Jerry said that they would initiate action and, in fact, they did. They published a request for information to start the rule-making process.

MR. BEHRINGER: That's not what he said.

MR. TYSON: Well, Jerry sometimes uses the wrong words, but the rule-making process has started in OSHA and there is pressure for it to move, and I think it will move. The complication of a process like this to address this issue, with all due respect, is much more -- is a much more complicated activity than the confined space standard or several other standards.

As I said at the outset, I'm a big supporter of state programs, and I think there are many issues when the states can lead the federal OSHA. I just don't think this is one of them.

CHAIRMAN MARSHALL: Mr. Snead?

MR. SNEAD: I have a number of questions of Mr. Tyson while you have the floor.

One of the requirements for regulating a substance that's an irritant, you talked about the 6 pp rule making significant risk for a carcinogen?

MR. TYSON: Right now -- well, there's not a right now -- the law says that in order to regulate the agency -- and when I say the "law" I mean both the federal law and the state law -- must find a material

impairment to health. And there would be some question as to whether a material impairment of health is presented by a simple irritation.

MR. SNEAD: But there are substances in the Z-tables which have exposure limits based on irritation, correct?

MR. TYSON: That is correct; however, the Z-table was the result of the adoption of industry consensus standards which existed even before OSHA was in existence and was through a rule-making process which is not governed by the same statutory language that requires material impairment of health.

MR. SNEAD: Are you saying then unless there's a wholesale adoption like that that OSHA would not regulate an irritant?

MR. TYSON: I think they would have some difficulty in doing so, although they might. They looked at the issue with respect to formaldehyde, although I think ultimately they regulated on the basis of carcinogenicity.

MR. SNEAD: Thank you. Dr. Gori, do you believe

that the evidence is sufficient to show that smoking cigarettes causes cancer in smoking?

DR. GORI: There's definitely an established risk factor, yes.

MR. SNEAD: Is there any evidence that there's a threshold?

DR. GORI: Yes. All the epidemiologic studies that we have. In fact, if you use the same procedures that EPA or other agencies use, OSHA as well as FDA, you could demonstrate a new effect ratio at least in the statistical terms that are used by the agencies.

MR. SNEAD: Is that information in the package that you provided to us?

DR. GORI: I have a reference to a paper that I have published on that respect.

MR. SNEAD: Mr. Turner, does ASHRAE have different recommendations for ventilation for buildings which allow smoking as opposed to those where smoking is not allowed? If so, why?

MR. TURNER: ASHRAE'S latest standard, ASHRAE 62-89, "Ventilation for Acceptable Indoor Air Quality,"

requires or recommends 20 cubic feet per minute per person in office areas whether or not smoking is allowed. They started with an older standard where they did differentiate between smoking and nonsmoking buildings. However, they only had five cfm's per person in nonsmoking buildings.

However, they found that to be insufficient to ventilate the building whether or not smoking goes on, so that's when it goes up to 20 cfm.

In designated smoking lounges where you concentrate smokers, they recommend 60 cfms per person and they allow you to use air from other parts of the building to ventilate the smoking lounges.

MR. SNEAD: In the older standard, what was the number for the smoking buildings?

MR. TURNER: 20.

MR. NOBILE: Any of these gentlemen, can you address this issue for me?

As a member of this Board, we are going to listen to a lot of testimony, a lot of private histories, and I've got to go back to the benzene which the report

indicates that we looked at it and we looked it, and anytime during the time you looked at it, did you look at suitable substitute?

MR. TYSON: You're talking about at OSHA when OSHA went through it's rulemaking process?

MR. NOBILE: Yes.

MR. TYSON: Oh, I believe they did, but I don't have the record in front of me so I can't tell you with absolute certainty that that was the case.

MR. NOBILE: Well, would you think that the reason why they went to suitable substitute group if it was possible was because it was an intricate part of someone's formulation that they needed it to be present in the workplace in order to produce a given product?

MR. TYSON: That seems reasonable to me. As I said, I don't recall the specifics, and I don't have the record in front of me.

MR. NOBILE: So then we can safely assume when we look at this whole situation that we can't classify smoking in the workplace as something that has to be present in a workplace in order to produce a given

product?

MR. TYSON: I think you can say that.

MR. NOBILE: So basically we have to look at them as different even though they're toxic, both of them, or any of them, whether it be asbestos or any compound of any kind, it's not necessary to be in the workplace?

MR. TYSON: Well, if you discount human behavior and human activities. You may have to look at the issue of field sanitation and the field sanitation standard and the issue of hepatitis B and blood-borne pathogens with that standard. You can make a similar argument that those are really not related to the actual activities of manufacturing a product or intrinsic to the workplace.

MR. REMES: Mr. Nobile, if I can just add one footnote to that, even if your view is there's a distinction because smoking is not indispensable to a production process or a product, you still have to look at the actual level of risk, if any, at the actual level of exposure in the workplace and the level of exposure is going to be different depending on whether

there is smoke in the immediate proximity, whether there's smoking in a separate room at another end of the building.

It can't possibly justify a blanket ban, for example, and OSHA has repeatedly said that you can't automatically extrapolate from the spousal smoking studies in this area, which were all that the EPA relied upon, and carry those over to the occupational setting.

MR. NOBILE: Did not the tobacco industry engage in a "suitable substitute" for tobacco in their cigarettes?

MR. REMES: I'm not aware of that.

MR. BEREANO: Finally, Mr. Chairman, I'd just like to call on our final panelist.

CHAIRMAN MARSHALL: Yes, we will accommodate that, but when we ask the questions would you ask those persons not to take more than five minutes?

MR. BEREANO: I will do that. I'd like to call upon, together Delegate Ray Huff, who's a delegate from Anne Arundel County; and Delegate John Wood, who

represents Charles and St. Mary's Counties.

Delegate Huff and Delegate Wood?

DELEGATE HUFF: Thank you very much. I enjoy being here.

I also have my own private business, and Maryland has been known as a leader in trying to take rights away from people, and we've been trying to stop that for some time. What I do in my business should be my business as long as everybody is safe.

Now, let me say this. I've listened to a lot of testimony here in the short time I've been here, and they said smoking and they put it together with a lot of things that are really illegal. Smoking is not illegal. If it's as bad as they say, then they should ban it and you should do that on a national level. However, it's a legal drug. Our tax base counts on it.

We figure our taxes based on money income, and we use the cigarettes to figure this. When you say "workplace," what is the workplace? Is it a man's truck? Is it out in a boat? Is it a ditch digger

outside the door? If it's not those places, then what you're doing, you're sending people outside. Is it more harmful for these people to catch cold and pneumonia running outside to smoke a cigarette? Is it more harmful for a person that doesn't smoke, like myself, to walk through this maze of smoking and get twice the amount of smoke that you would normally get?

These are the things that I'm asking you because I feel that that's where you're going to get the smoke. When everybody stands around so you're saving a few people from a little smoke and you're putting everybody else into a real condemned area.

So where are you really helping the health of the person?

I think what MOSH is supposed to do, and I think was the intent of the legislation, that they're supposed to make health standards, one of the standards being what is safe smoke? And you're to decide this and come up with a solution. Then it's up to us in the workplace if we want to eliminate it or we want to put in and spend hundreds of thousands of dollars or ten

thousand, which many companies have spent to clear the smoke out of the air.

That's what your job is to do, to find out, does smoke harm people, and at what extent does it harm people, and how long does it take to harm people?

Let the employer of this state figure out how he wants to get rid of that smoke in the workplace. I might want to put smoke filters in my rooms, and that should be my option. But it should not be your option to tell me on a legalized drug or a legalized cigarette product what I should do with it, and especially when it hurts the tax base of this state.

And I ask you to take out of consideration and think of what your job is, to make things safe and not to tell people where to move it to and make a commitment like that.

Thank you.

DELEGATE WOOD: Good morning. It also is a pleasure for me to be here this morning. I am here today wearing two hats. I'm also a small businessperson, along with being a legislator.

I have a very strong feeling towards government interfering with business and overregulation. If any of you all have ever been a small businessperson, you know one thing you don't need is more regulations. Leave it up to the private sector. Let them work it out. In my business -- I just want to give you an example -- in my business several, three or four years ago I did because I'm trying to work with my customers that come into my store and be courteous to them I implemented a plan, a policy of smoking. There is no smoking in my store as far as the employees are concerned. They go outside. They go to the restrooms. But every time it happens, every time that happens, it's 10, 15, 20 minutes that's taken out of their work productivity. In the course of a day, a couple hours. It costs money.

But I think that my employees have a right too. They have a right if they choose to smoke, that is their right. Give them the chance to do the job and to smoke and I think all businesses would be better off if they were given the opportunity to implement their own

program.

This issue, I don't think, should be left up to the Department of Labor and Industry. If there's a problem, let it go to the Legislature. Let it go to Washington. Let it be a national thing. Don't do it just in Maryland and make us as business people uncompetitive with other businesses when they can go across into Virginia or the District of Columbia or Delaware and they don't have these regulations. I think it's wrong.

I also come from an area in southern Maryland, Charles and St. Mary's County where the heart of the tobacco -- that's where the tobacco is raised in the state of Maryland. It's a $20-plus million industry that is fighting to survive, and I'm not sitting here saying that tobacco is good for your health or it's bad for your health, but I'm saying it's an industry that is fighting to survive.

Every time that we do something like this here, we're sending a message out to these people or the consumer out there that this is a bad business. And

they look at my farmers back home and say, hey, you're raising a product that is bad.

And in some of those cases, it's no different from -- some people think it's no different from raising tobacco as it to raising marijuana. There is a difference. There is a difference.

I'm asking you don't regulate. If there's a problem, send it to the proper place, let the Legislature work on it and see what they can do with it, but don't regulate. That's one thing we don't need is more regulations.

With that, I just say thank you and please give this a lot of consideration. Thank you.

MR. BEREANO: Thank you very much, Mr. Chairman.

I think also the Board will, if it hasn't received already, will be receiving a letter from Senate President Mike Miller expressing his very strong opposition to this proposal feeling that it does interfere with the Legislative domain and also his view that he is very much opposed to this proposed regulation.

I have tried through the panelists to present legal, scientific, rational, factual views on this issue for the Board's consideration, not views of proselytizing other people's work habits and other people's lives and extremism feelings of what people would like to do in terms of trying to run other people's lives.

We sincerely ask the Board's consideration of this matter and we look forward to seeing you on the 16th as well.

CHAIRMAN MARSHALL: Thank you for coming. The MOSH Advisory Board is responsible for health and safety in the workplace by statute. And in the 14 years that I've been associated with this Board, we have undertaken to get to the facts, to review them and to make what we feel are reasonable decisions.

We are in that fact-gathering process now. And we will analyze those facts and we will arrive at some decision that indicates the need or the need not for protection of health in the workplace.

And at this time, before we move to the next

group, there may be those who need to have a reprieve and we would allow about a five-minute break for that purpose.

(On and off the record.)

CHAIRMAN MARSHALL: I would like to announce that those of you who have exhibits to present to the Board that you give them to Mrs. West so that they can be accounted for in terms of the items received with your concerns. Do not give them directly to the Board members. Mrs. West at the table on my left will be the one to give them to.

Also, for those speaking on the mike, if you turn your head, turn the mike with you because the recorder is having difficulty picking up the voices. Those who are speaking as well at the tables to hold the mike close to your mouth so we can hear.

Now, we still have a few conversations going on in the building. I would ask you that if you have to talk, please go into the next room or go into the back where it will not interfere with the comments of the people making presentations so that we can record it

and have all of testimony on tape.

Thank you very much.

Ms. West?

MS. WEST: Dr. Banzhaf and the representatives from the Action on Smoking and Health.

ACTION ON SMOKING AND HEALTH PRESENTATION

DR. BANZHAF: Mr. Chairman and members of the Board, I would like to thank you for inviting us to come and for giving us an opportunity to reply to the Tobacco Industry panel.

Any time the Tobacco Industry with its history of deception accuses a major federal agency of practicing bogus science, I think that cries out to be answered, and to answer just one question which did come up, was asked whether or not there are any known carcinogens in environmental tobacco smoke, Mr. Gori, despite his expertise, apparently forgot that.

But on page 15 of the ASH report on ETS, which has been given to each of you, we have listed the major components of environmental tobacco smoke from the EPA report and indicated by two different signs which ones have been proven to be carcinogen, which ones are believed to be carcinogens and I think that will answer that question.

What I would like to do is to discuss, first of all, the scientific evidence and then how that ties in

with the legal requirements by both the federal OSHA statute and the state OSHA statute, to then allow my colleagues to briefly comment on three matters that are of particular concern to them, and then for me to come back and try to address some of the major arguments which were made by the tobacco industry.

I'm here kicking this off, not because my scientific expertise is better than that of others. You're going to hear from Mr. Repace, Mr. Baird, and others who have far greater scientific expertise than I. I have a degree from MIT. I've published several technical papers. I have two US patents. I did develop a statistical mathematical tool called the Banzhaf Index, but about 25 years ago I went astray and became a public interest lawyer, so perhaps my greatest value is in being able to discuss some of this in a less scientific manner than some of my colleagues.

Let me put aside for a moment, if we can, the overwhelming volume of evidence indicating that environmental tobacco smoke, second-hand tobacco smoke, passive smoke, is a major irritant to majority of

Americans in situations which they commonly encounter. Let us also put aside what is now well-documented -- that tobacco smoke is the major cause of asthmatic attacks among adults, those with preexisting asthma, that it is a major physical irritant, often causing people literally to leave from work- people with asthma, hay-fever, sinusitis and a wide variety of respiratory problems -- and simply focus on the fatal issue; that is, primarily lung cancer, also heart attacks.

I think we have to start with the understanding that in virtually all the cases where chemicals are found to be carcinogens we do not have any of the evidence which is so widely discussed here today. We do not have epidemiological studies at the level where people are proposing to regulate.

In most cases, we have animal studies and often even those animal studies are at highly elevated levels. You may recall we banned cyclamates because rats drinking the equivalent of a couple hundred cans of Tab a day were said to develop certain cancers. In

some cases, we have levels of exposure many, many times higher than what we were looking to regulate at. That's the case in benzene. That's certainly the case in radon where we look at these extraordinarily high levels.

Indeed, the Surgeon General has said we don't have any other epidemiological studies of any of the other cancers at the levels that we are proposing to regulate.

How then do we know that substances cause cancer? Generally, we have to rely upon those and then make the assumption that unless there is some reason to believe that something which causes cancer at a high level suddenly loses that property at a lower level, or that there are some demonstrated differences between the animal studies and the human studies. We generally assume under the uniform cancer policy that the substance is a carcinogen.

With that as a backdrop, let me trace for you very briefly the history of the study of the carcinogenicity of environmental tobacco smoke.

The first indication we got was a paper by White and Froeb, in the early 1980s which found substantial increases in precancerous lesions in the lungs of women who were married to smokers as compared with those who were not smokers. The question then became, could the environmental tobacco smoke possibly -- we didn't call it that then -- but could the environmental tobacco smoke possibly be causing that?

And the immediate problem that many people had conceptually was, well, how can this stuff which is so dilute possibly have any impact on non-smokers? And there are a number of answers, and one of them is the one provided by Dr. Gorton; that is, there are differences between so-called main-stream smoke and side-stream smoke.

But the problem is, that the side-stream smoke is far worse for exactly the same reason that you probably experience with your fireplace. If your fireplace is not getting much air, you get a rather incomplete low-temperature combustion giving off far more dangerous hydrocarbons and other chemicals. When you have a lot

of air coming in, that fire can burn much hotter and brighter and you get more complete combustion and generally a cleaner burn.

The same thing happens with a cigarette.

When that cigarette is sitting, what we call "idling," it's not getting very much air. It's not getting very much oxygen. Most of the oxygen is coming from chemical compounds within the cigarette itself. When it is puffed on, somebody draws on it, you see it light up, it becomes bright red, it's getting a lot of oxygen and the burn is much more complete. So we know that the smoke being given off from a lit cigarette contains proportionately more of many of the dangerous chemicals, the known carcinogens, the lead carcinogens, cocarcinogens, mutagens, than the so-called main-stream smoke.

Secondly, we know that when the smoker inhales that smoke is being filtered. It's being filtered at very least through the tobacco, which does absorb some of the material. Increasingly it's being absorbed by these filters at the very end, so by the time it gets

to the smoker and down into the smoker's throat, it has been filtered.

Third, we also know that smokers smoke, actively smoke a cigarette for only a very small portion of the time from the time they light it up until they put it out -- maybe 10, 15 seconds, 20 seconds at the most, whereas they're smoking for an average of 10 or 15 minutes, so a lot of these chemicals are being given off into the air and we can measure them in the air. We can measure their byproducts in human beings. We now know that the nonsmoker absorbs considerable amounts of these, that they remain the body for a considerable period of time.

So that, by itself, ought to give us a pretty clear indication that these chemicals are getting into people's systems in significant amounts.

We certainly know that there are many components of environmental tobacco smoke, whether it's mainstream, side-stream or environmental, which is the mix that remains in the air, which have been proven to be carcinogenic. And on the cancer policy alone, that

probably would be enough to make a finding for carcinogenicity.

Secondly, we certainly know that this gestalt of some 4,000 chemicals which smokers inhale when they actively smoke certainly causes lung cancer. There are thousands of studies on that.

So once again, having no reason to believe that there is some safe lower limit -- certainly none has ever been demonstrated, despite all the tobacco industry poured into it -- we would naturally, again, make the assumption that if people are inhaling it, it would cause lung cancer, although in smaller amounts.

In any case, other studies began to appear shortly after White and Froeb. One was in Greece, another one -- probably the most famous one by Dr. Hirayama in Japan, compared the wives of nonsmokers with the wives of smokers. Why would we do that?

Well, in any study you have to have matched pairs, controls. You have to compare one group to another. It's very difficult in our society to single out 5,000 or 10,000 people who aren't exposed in their daily

lives, versus 5,000 or 10,000 who are, or much less to say how much they are exposed. So it seemed the best way to get a handle on it would be to look at these two groups, and the fact that they were in these two countries were seen as more significant than originally done here because the wives there tend not to work outside the home; they largely do remain in the home, so we don't have the confounding variables of their exposure going to the workplace or everywhere else.

Secondly, the homes tend to be far smaller and poorly ventilated, so if they were in effect, we would think we would see it there. And, indeed, both the studies did show the effect. Dr. Hirayama was able to actually look at it and find, as I recall, a dose relationship; that is, as you increase the husband's smoking, so did the rate of increase of the wife's lung cancer.

He looked for confounding variables. I went to one of his seminars one time and he compared how they cooked the food and the husband's occupation and the age and where they lived and how many green vegetables

they ate, anything he could think of, and found no other correlation other than the tobacco smoke.

And on that basis, many people felt that there was enough evidence at that time, the American Lung Association, I believe, took that position. The American Cancer Society did not. They were much more cautious. They had a previous study designed to do something else which they thought didn't indicate it, and therefore they opposed that view.

Nevertheless, the studies rolled in. Dr. Hirayama himself did a very interesting one. He reasoned that smokers tend to have an abnormally large number of cancers of the throat because as you smoke a cigarette you tend to handle the smoke through your throat, and he reasoned that nonsmokers tend to inhale through the nose; therefore, we might expect a larger percentage of nasal cancer. And, indeed, he went back and looked at exactly that, and that's exactly what he found.

And so through the early part of the 1980s these studies began to accumulate. At the end of 1986, there were two reports by basically the two agencies which

are set up to do exactly this. The first was by the National Research Council, the National Academy of Sciences, which is a body set up by Congress precisely for this purpose -- to provide a body of distinguished, independent scientists to provide independent advice and conclusions with regard to environmental tobacco smoke.

They concluded in 1986 on the basis of far less data than is available today that, yes, environmental tobacco smoke causes lung cancer and lung cancer deaths among non-smokers. Within a month or two, the second report came out, the one by the U.S. Surgeon General and the U.S. Public Health Service -- again, the very agency Congress has set up to look exactly at these basic issues.

By this time, of course, more studies have come out and I might say that another study by the American Cancer Society came in and the Cancer Society also changed its mind, now taking the view that there was enough evidence.

I might point out that it wasn't at that time on

their political agenda because at that point they were still opposing bans on smoking. So the Cancer Society moved, as many of these others, do not because of biases or their personal agendas, but because that's what science says.

And the U.S. Surgeon General says here in this report, again based upon much less evidence than we have today, that the evidence here is stronger than for virtually any other carcinogen simply because we do have these various epidemiological st_dies, not at these highly elevated levels, not in animals, but at ordinary levels in human beings.

Several years later, NIOSH, National Institute for Occupational Safety and Health, which is the very agency set up to serve as the research arm for OSHA, did its own study again. By this time, we had, I think, almost two dozen of these separate reports. Various studies published in refereed medical journals -- not the ones the tobacco industry likes to rely upon, but conferences they fund on published papers and so on, but published papers published in major referred

medical journals subject to peer review and so on.

NIOSH met with representatives from the tobacco industry. NIOSH met with my organization. We each made our arguments. We each submitted our data. This agency, which so far as I know hadn't taken a position on the issue before, again reached exactly the same conclusion.

At this point, even prior to the EPA's most recent study, there are now then five U.S. agencies -- they're cited on page 2 of our report -- all of which have reached exactly the same conclusion. They are also joined by the World Health Organization. They are joined by other organizations like the American Medical Association, the American Public Health Association and so on, all reaching exactly the same conclusion.

Even prior to this EPA study, the EPA had issued its own very brief report saying that, yes, second-hand smoke was a carcinogen. That was published and widely distributed. The purpose of this study was not to determine whether or not ETS was a carcinogen, but, rather, to do what we call a body count, to found out

just how dangerous it was, how many people died each year.

But, necessarily, they revised the issue. They had, at this point, some 30 different studies. It was carefully reviewed. They reached the same conclusion. In addition, they had an outside panel, so-called Science Advisory Board, made up of scientists, eminent in the field, who had no connection with the EPA or with either side to the controversy, supposedly to review it.

It turned out, however, that almost half the members of that Science Advisory Board -- and this is a matter of record -- admitted on the record that they had direct financial ties to the tobacco industry. One board member announced in an open meeting he had just received a $1 million-plus grant from a tobacco company and, indeed, was, at that very moment, in the process of apply for a renewal for another one.

Now, in most judicial proceedings one would certainly see that as grounds for disqualification and bias. It was not here. And in saying this I do not

mean to impugn the integrity of any of these members or to suggest that they acted out of bias, but simply to point out that if there was any bias, any movement, any desire to move in one direction, it would be in favor of the tobacco industry rather than in opposition to it.

Nevertheless, Dr. Gori asked you to come in and believe that the EPA, the U.S. Surgeon General, and the U.S. Public Health Service and NIOSH and the American Cancer Social, the American Heart Association, all these other organizations, all of them are wrong. They do not understand the data, they misconstrued the data, they made all of these mistakes that he, Dr. Gori, is able to pick up, and the only people you can really trust, the only people who are going to be impartial in this are, of course, are the tobacco industry.

That's basically, I think, the issue before you.

So I think the issue of whether or not there is reasonable evidence, substantial evidence on the record, any way you want to look at it, as to whether or not environmental tobacco smoke causes lung cancer

is very, very clear.

Does that mean to say that nobody can say anything about it, that somebody couldn't point at one study or another study and say, well, maybe if you did this and maybe if you did that...? Well, of course, the answer is no.

This is true in any scientific area any time you regulate in a public health area. But what I will tell you is these exact same arguments are being made by the tobacco industry when we go in to try cases as to whether or not a smoker's lung cancer was caused by smoking. The data there isn't satisfactory for them either, and even Dr. Gori ducked your question. He said ETS is a risk factor. He was not willing to concede that tobacco smoke is a cause of lung cancer.

So these arguments are made constantly by the tobacco industry. I know of no reputable body, none, which has examined this issue, which has reached a contrary conclusion. I know of virtually no scientist, other than those the tobacco industry pays to bring in, who contend that this is controversial.

In my judgment, I think the issue is about as controversial as whether or not the earth is flat. And the tobacco industry has about as much scientific credibility as the flat earth society; the only difference is, they have a multimillion dollar budget and they can afford to bring people in to make the arguments the other way.

Now, when we first started looking at the issue of active smoke -- the Surgeon General's report will be 30 years old this January -- you may recall the first thing that was found that it caused lung cancer, because lung cancer, for various technical reasons, tends to be far clearer, easier to spot, than many of these other issues. Only later after more and more data came in were we able to conclude that not only did it cause lung cancer, but it caused cancer to other sites and that it also caused heart attacks.

We are now also in that situation. There are approximately a dozen published studies -- again, in major referred journals -- strongly suggesting that environmental tobacco smoke, in addition to causing

lung cancer, also causes heart attacks among nonsmokers and deaths from heart attacks from nonsmokers.

This has not yet been formally confirmed by any of these agencies. The EPA notes it, says the studies are there, says that if they prove to be true it would certainly add to the burden. I think the weight of the evidence is in that direction, and for whatever it may be worth the U.S. Surgeon General as well as the major national antismoking organizations, the World Health Organization and others, cite the figure of over 50,000 deaths each year from environmental tobacco smoke. That being the combination of lung cancer, cancer at other sites, and heart attacks.

But, again, the evidence is much, much stronger with regard to lung cancer than it is with regard to those others.

Where does that then leave us from a regulatory point of view? Under the Benzene case, under the Cotton Dust case, which it came down one right behind each other in the U.S. Supreme Court, the Supreme Court made it reasonably clear what the law is to apply and I

will have to disagree a little bit with Mr. Tyson. I've taught the cases as a professor of administrative law for many years.

What the Supreme Court said is that you must first find a significant risk. That is the first touchstone. The OSHA had failed in Benzene case to make that specific finding. They felt, for various legal reasons, they didn't have to make the finding. The Court said, no, you must first make a finding that there is a significant risk.

What does a significant risk mean? The Court said, well, certainly 1 death in a million would not be significant. Pretty clearly one in a thousand, that would probably be significant. But there's a vast area between 1 and a billion and 1 and a 1,000. 1 and 1,000 has never been, so far as I'm aware, adopted by the U.S. Supreme Court or any other court as a basic minimum requirement for regulation by OSHA or by any other agency.

Indeed, a paper by Travis which reviews the decision by OSHA and many other agencies and which I

believe Mr. Repace cites in one of his articles, shows that ordinarily we regulate -- we have what we call de minimus and de manifestis. If it's less than 1 in 1 million we generally figure it's not worth regulating. If it's more than about 3 in 10,000, at least for large population groups, that's the point where we begin to see it as being a serious risk or, in the words of OSHA, a significant risk.

Now comes the second step, and here is where I think the Benzene case is very different. In the Benzene case they started with a standard, an existing standard of 10 parts per million and they were not able to show that at that existing standard there was a significant risk.

With regard to tobacco smoke, we have no standard right now. The evidence, I think, conclusively shows that the ordinarily levels of smoke in offices we have a significant risk. The next step then which the statute spells out and the Supreme Court discussed is we must now lower the exposure level or the risk to the lowest feasible level.

"Feasible" means technologically, feasible means economically, feasible may mean from a human point of view that if it's impossibly difficult to do it perhaps you can't do it. I think one of the questions before correctly stated the issue with regard to Benzene, with regard to Cotton Dust, with regard to Poly Vinyl Chloride and most of the other chemicals, these are essential to some kind of industrial or manufacturing process; therefore, at a certain point as we keep trying to go down the next 10 percent, the next 50 percent, we get to the point where it simply is not economically feasible. There must be some, and that's where we draw a line.

With regard to tobacco smoke with the possible exception of maybe tobacco shops or places where they test cigarettes at Philip Morris headquarters, there is no process that requires tobacco smoke, so the lowest feasible level is zero. It's feasible technologically. It's feasible economically. Indeed, there are many studies showing that economic benefit. And certainly we know it's feasible in a workability sense because so

many different companies have, in fact, done it, and it works and the problems that everybody predicted would happen simply do not occur.

And if you go to Baltimore and if you go to New York, if you go to Washington, you'll find many buildings, indeed, which are totally smoke-free and people smoke outside them, and it seems to work.

Why not establish some kind of level? I think the law does not permit it because it says "lowest feasible level." In this case, "feasible" means zero, but there are additional reasons why not.

First of all, again a recent paper by Mr. Repace, who will be testifying, calculated just what that level would have to be if you wanted to set it according to the ordinary standards of acceptable level of risk. And those standards are so impossibly low that almost nobody could meet it, even permitting smoking in separately ventilated rooms.

Indeed, the Surgeon General, NIOSH, and EPA all looked at the issue of ventilation, concluded you cannot establish it through any ventilation, said that

if you're going to permit smoking along the federal guidelines are in our submission that you should confine it on a temporary basis to a separate room, separately ventilated, with negative pressurization to keep the air from drifting out as that door is open and closed.

And I might add, by the way, there's a recent case out in California where the small amount of tobacco smoke drifting out of a first floor smoking room where the door was kept closed drifting up a stairwell to the second floor was found to have caused enough respiratory distress to a teacher up on the second floor that she get an award of $29,000 and some odd dollars. So the idea of having separate sections or partitions, or whatever, simply is not workable.

Third, if you want to establish the standard, in most of the cases where standards are established we're talking about a relatively small body of industries which use benzene or poly vinyl chloride or asbestos, or whatever, and where they can set up and administer, monitoring badges, devices and so on. Can you

possibly suggest that you're going to do that for every workplace in the state of Maryland that they're going to have a meter up there measuring nicotine or particles, they're going to have badges on people, and when this unbelievably low level is triggered an amount which would be triggered simply by the smoke drifting out from the door, that somehow we're going to draw a line and say, no, we're going to go in and inspect.

So for all of those reasons, I think the science and the law very clearly indicate that it is appropriate for this body to regulate smoking in the workplace, and to regulate smoking in the workplace by doing what OSHA has done, as you pointed out, in a number of other situations and that is to ban it entirely.

What I would like to do now is invite my colleagues to address the issues that they have addressed, and then I would like to come back and to try to answer some of the arguments which the tobacco industry made, and then to welcome any of your questions.

MS. SCHEG: Good morning, Mr. Chairman, and members of the Advisory Board.

My name is Kathleen Scheg. I'm Legislative Counsel to Action on Smoking and Health, and I'm also a Maryland resident.

In that capacity as a Maryland resident, I've worked with the Legislature, I've worked with the forest and I've served on an Advisory Board comparable to yours.

MOSH's purpose, as I'm sure you know even better than I do, is to "ensure, to the extent practicable, that each man and woman in the State has working conditions that are safe and healthful..."

The law also says that "the Board shall propose or recommend occupational safety and health standards that most adequately ensure, to the extent feasible on the basis of the best available evidence, that no employee ... will suffer material impairment of health or functional capacity."

In light of MOSH's statutory responsibilities, I want to begin by commending Secretary William Fogle for

recommending that Maryland extend its existing ban on smoking in government workplaces to cover all employees. For environmental tobacco smoke is surely the greatest health risk faced by Maryland workers today.

Therefore, both in my official capacity as a representative of Action on Smoking and Health and as a Maryland resident, I urge this Board to support Secretary Fogle's recommendation of a total ban on smoking in all Maryland workplaces.

In support of that ban, I respectfully submit the following information. As Mr. Banzhaf has just laid out for you, numerous respected agencies, both nationally and internationally, have determined that environmental tobacco smoke is a carcinogen. What I want to emphasize is that it is the worst occupational carcinogen of all.

The number of deaths annually from environmental tobacco smoke far exceeds the annual deaths from all other airborne carcinogens currently being regulated. According to the EPA report, we know there are

approximately 3,000 ETS deaths a year. The next highest substances are vinyl chloride, radionuclides, asbestos, et cetera, and they are all under 30, one fraction of the number of deaths from environmental tobacco smoke.

I don't know how the tobacco industry can ask if there's a significant risk. There's an abundant significant risk.

In addition to that, you're going to hear about the heart disease deaths which are ten-fold the number of lung cancer deaths, to say nothing of the emphysema, asthma, and other issues all referred to by Mr. Banzhaf.

Moreover, as one of your members already pointed out, these are unnecessary deaths. Tobacco smoke is not needed for any production, manufacture or service industry in the state.

I also want to go on from my legislative and other experience to talk about how Maryland workers are largely unprotected from this major health risk. Maryland has, indeed, made some progress in recent

years, particularly under the Schaefer Administration, in addressing the hazards caused by environmental tobacco smoke.

The schools have finally banned smoking, and Governor Schaefer had issued an executive order prohibiting smoking in state-owned and leased buildings. Counties like Montgomery, Howard and Anne Arundel have also enacted ordinances to restrict smoking in the respective counties. On the whole, however, there is a dearth of public protection from ETS in Maryland. It is no wonder that Maryland has the highest incidence of cancer of any of the states in the nation.

You want a compelling state reason? I think it's right there.

Maryland has one of the weakest state laws in the nation compared with other states. While the trend today is toward smoke-free environments, the Maryland General Assembly as a whole has consistently refused to take any meaningful action, and they want you to send it back there? Maryland has no workplace smoking

law, yet 37 states have at least some kind of workplace smoking law.

Restricting environmental tobacco smoke in the workplace, as Mr. Banzhaf said, is technologically and economically feasible. In my prepared testimony, which I won't go into in detail now but which is available to your attorneys, the Supreme Court has already defined "feasible" to mean economically and technically feasible.

Let me point out that all it costs economically to do this is a simple notice. You publish the regulation, people put up a sign, that's the economic cost.

On the other hand, there are tremendous cost savings -- first of all, in terms of health care cost containment. The primary fact of a workplace smoking ban would be protect the health of the American workers. According to Repace and Lowry, 50 percent of the average population risk from passive smoking is estimated to be workplace related.

I know for a fact that Maryland has had a number

of committees studying how to contain the health care costs. Well, if you cut down on the number of disease and death, you're obviously going to contain the health care costs.

Also, by regulating smoking in the workplace, you will provide a valuable incentive for smokers to quit.

We also talked about the fact that Mr. Fogle proposed this because of the recent death of workers. Fire prevention also not only saves lives, it has economic savings attached to it.

The Fortunoff Company in New York is one that is well-known for having established its no-smoking policy because of the risk of fire. They had fires and decided that they needed to prevent smoking in order to deal with that. Also, Johns Hopkins institutions here has actually put out a report attached to my testimony that showed that there was an even greater reduction in smoking-related fires from an average of 20 per year in their buildings before the smoking ban was instituted, to zero in the year immediately after the ban.

There are also legal financial benefits in terms

of lawsuits that won't be brought against the companies which my colleague Athena Mueller will discuss shortly.

And there are simple janitorial costs. Again, attached to my testimony is a letter from a janitorial service lowering the cost to the company because they no longer have to empty ashtrays and clean up spilled ashes, et cetera.

Existing OSHA regulations also demonstrate the feasibility of banning smoking in the workplace. I was amused by Mr. Simon's talking about the asbestos regulations. I think a well-kept secret that I wish would be much better known is the fact that when OSHA passed the asbestos regulation, they banned totally all smoking where the asbestos workers were, not just for the people actually handling the asbestos, but for anyone in the vicinity.

So there are existing regulations which have dealt with a ban.

MOSH's duty is to protect workers. Leaving continual progress to the whim of private employers who have made very substantial progress, or to particular

counties, does not fulfil MOSH's duty. Protecting employees from exposure to environmental tobacco smoke, is no more optional than protecting them from exposure to asbestos, benzene or other potential occupational carcinogens.

Nor should you rely on federal OSHA. Federal OSHA, quite frankly, is neglecting its duty to protect workers. It's simply not a viable option to wait for them despite the abundance of scientific evidence of the significant harm to employees and in spite of ASH's repeated attempts over the year to prompt OSHA to regulate ETS, OSHA is continuing to neglect its duty to the American work force.

Currently, ASH is involved in a lawsuit in the U.S. Court of Appeals for the District of Columbia Circuit seeking to compel OSHA to ban smoking in the workplace nationally. The suit is based on the fact that the Occupational Safety and Health Administration has similar regulations to yours requiring them to insure that every man and woman in the United States has a safe and healthful working conditions.

The Court has already rejected OSHA's attempts to have the suit dismissed and has ordered the clerk to set the date for a court hearing on the merits. We expect to receive notice of that date in the very near future. Nonetheless, you should not wait for OSHA, nor the courts, to act.

Recently in the last couple of months, the head of the Health Standards Division at OSHA has said that even if they decide to act on ETS directly, it will take them three to five years and if they do what the tobacco industry would like them to do and mix it up with these other less serious elements and try and regulate them all as an indoor air quality, we're looking at five to eight years.

I think you made the decision before not to wait when OSHA was delayed, and I think this is another very appropriate opportunity.

In conclusion, Maryland has the authority, and I'd respectfully suggest the responsibility, for protecting its workers from ETS, the most serious health hazard facing workers today. The failure of federal OSHA to

act to protect workers across the nation from tobacco smoke is no impediment to MOSH's regulated ETS.

Maryland has the opportunity to lead the nation in addressing the most significant health risk facing workers today, and one which is of particular concern to Maryland because of the state's high incidence of cancer deaths.

Thank you.

MR. MEYERS: Good morning. My name is Peter Meyers. I'm an adjunct professor of law at the George Washington University Law School where I teach a course on substance abuse law, including tobacco. I've been involved with tobacco control for more than 20 years, and I currently serve as special counsel of Action on Smoking and Health in Washington.

I want to focus on two specific narrow issues which I would like to address briefly. The first issue is assuming that a regulation is adopted, my view is that the proposed regulation is too narrow and that the language of it should be broadened and that's the first issue I'd like to address for a minute or two.

And then the second issue I want to touch on is to put what is being proposed here in the context of the very many regulations and banning of smoking which are going on throughout America on the national, state, and local level.

Turning to the language first -- and, again, I have submitted today prepared testimony which discusses this in more detail. I just want to touch upon it for a minute.

The proposed language for the smoking ban says that the employer "shall ensure that an employee while in the place of employment does not smoke."

From my perspective, while that's a very good start, it has to be expanded. It should not be limited to a prohibition of smoking merely by the employee, but should also include, in my view, a ban on smoking not only by employees but on visitors, customers or other persons who enter the work site.

So instead of just focusing on the employee, my suggested language is -- and this is on page 2 of my statement, "all employees, visitors, customers and all

other persons are prohibited from smoking or carrying any lighted tobacco product in the workplace."

And it seems to me the goal of the regulation is to protect the health of the nonsmoker and, I guess, it protects the health of the smoker to the extent that they cannot smoke on the job site. But if we're interested principally in protecting the health of the nonsmoker, anybody who enters the worksite should be prohibited from smoking, and that we don't discriminate between one class of individuals versus another, that nobody should be allowed to smoke in the worksite.

And that's my recommended language on page 2 and my discussion of why if you're going to adopt this regulation that that broader language should be adopted.

The second issue which I want to touch on briefly, which is also discussed in more detail in my written material, is that as the evidence over the past several years has continued to accumulate that environmental tobacco smoke is a major health hazard -- lung cancer and other cancers, heart disease and other problems

caused by environmental tobacco smoke -- as this evidence has continued to accumulate -- and not as the tobacco industry says we're talking about the EPA only, but as Professor Banzhaf says, we're literally talking about dozens of national and international groups and private health associations who have looked into this -- as these studies, reports have continued to accumulate, there has been action throughout America over the past few years and significant action to protect the nonsmoker from the dangers of smoking.

Again, my written statement goes into it in more detail, but the obvious instances and the most publicized one on the federal level, finally, after all of these years of fighting, smoking is banned on airplanes. When Professor Banzhaf started this and we were fighting and spent many years just to try to get separate seating sections and, again, we finally reached the point where domestic air flights you cannot smoke to protect the health of nonsmokers and for the other concerns that Kathy's talked about -- fires and other concerns.

It seems to me exactly those same principals would apply in the workplace.

So you can no longer smoke on domestic flights, you can't smoke in the White House anymore, in Washington, D.C., and you can't smoke in many federal buildings.

Just this past month 16 state attorney generals -- I'm hoping the state attorney general of this state will join them -- has proposed banning all smoking in fast food restaurants, with, particularly, the young children who walk into that smoke-filled atmosphere and all the problems that causes.

You have cities and states and municipalities and counties around the country which are continuing to pass statutes banning smoking in restaurants and a whole variety of places, and the one organization, entity, that stands out as not acting is the federal OSHA. Contrary to what the tobacco representative told you, the federal OSHA has not begun rule-making proceedings to prohibit tobacco smoke.

I would state that as simply a lie. There may be

honorable disagreements on the evidence and on certain points, but on this point I think it is simply black and white. It is a lie to say to you that federal OSHA has initiated rule-making proceedings.

All they've done 20 months ago, more than 20 months ago, was to request information on all indoor air quality totally. To request information is by no stretch -- which they've been evaluating for more than 20 months now with nothing coming out of it yet -- is by no means the same thing as beginning a rule-making proceeding.

And as Ms. Scheg pointed out, we petitioned 17 years ago at the federal level to get them to act. We sued them in court five times -- we're talking about the federal OSHA -- to prompt action, and as recently as October of this year OSHA wrote us saying they were still not yet prepared to make a decision.

So that's really the question.

And as for whatever pressures and concerns that federal OSHA has -- and we certainly spent a lot of time and will continue to do it to get them to finally

act, which they have not done yet -- it seems to me when you look at all of the accumulated evidence and also look at what all these different governmental bodies are doing at the federal, state and local level, it is time to act.

It is time to say workers should be protected just like airplane passengers should be protected, and it is appropriate for this state to take a lead in all the other areas where smoking is being regulated.

As I say, 16 other attorney generals are pushing, and I expect soon to have a ban to all fast food restaurants. It is appropriate for entities like this to take a lead and say it is important to protect the health of the nonsmoker and to adopt a regulation like this.

Thank you very much.

MS. MUELLER: Mr. Chairman, members of the Board, my name is Athena Mueller. I'm General Counsel of Action on Smoking and Health, a national charitable, nonprofit organization founded by Professor John Banzhaf, which for over 26 years has been concerned

with the issues of smoking and health.

Our supporters throughout the state of Maryland and the United States include nonsmokers, ex-smokers, smokers who want to break their habit, and smokers who are ill or dying from diseases caused by cigarette use.

I may also add that I am visitor to Maryland.

ASH greatly appreciates this opportunity to present testimony on two topics, which may be of assistance to the Board in considering the hazards of workplace smoking.

First, examples will be given of the extent of the problem as broth to ASH's attention by employees exposed to workplace environmental tobacco smoke. Secondly, examples of ways in which employees are fighting to protect themselves from the hazard of ETS in the workplace.

Unlike the legal and administrative tribunals which usually hear second hand of the dangers of ETS, ASH has daily contact with the victims whose complaints are set out for you to read in their own words in Exhibit I.

ASH is currently assisting four Maryland residents who are clearly working in unhealthy conditions. One complaint describes "fumes from cigarette smoke that pour out of the office of one careless fellow worker who has refused to comply even with numerous complaints over the words of other fellow workers."

Another describes three cigarette and one cigar smoker in windowless offices, while another states that smoking is allowed although the working facility "has no provision for removing smoke -- there is no exhaust system."

These complaints come from employees who have not yet suffered the effects of exposure to ETS but who wish to preserve their health.

Much more disturbing and sometimes tragic are many letters which ASH receives from employees whose health has already been damaged by exposure to ETS. One employee looks forward with dread to a work transfer to a department with smokers. "When exposed to cigarette smoke in past jobs, I've experienced asthma attacks for the first time in 20 years, constant bouts of

bronchitis, almost routinely every 4 to 6 weeks, allergic rhinitis ongoing. My allergist told me that if I did not quit having chronic bronchitis I would have chronic lung disease in a few years."

Another employee writes, "As a victim of sinusitis, I am not able to be exposed to smoke for more than a few minutes before my nose begins to run. Should I not be able to get away from the source of smoke, I have a sinus headache with ear pain following the headache."

Some employees are understandably angry. "I understand you are the people to write to with complaints about second hand smoke. Well, my office is so full of smoke by the end of the day I'm blowing chunks of blood from my nose and my clothes stink to high heaven."

These problems are grave enough, but they pale before the hazards that some sufferers from ETS have to endure. We have one individual born with a congenital heart defect who was also a blue baby and who has severe respiratory reactions to ETS causing violent

coughing spells which result in soreness in the chest and the threat of broken ribs.

Another victim, a hospital worker, suffers from a life-threatening allergy. On exposure to ETS, she goes into bronchial spasm which, in the past, has brought on congestive heart failure.

Finally, a husband reports that his wife, a mental health counselor, has been exposed to ETS for three years despite her verbal and written request for a smoke/pollution free environment. Her recent chest x-ray has now exposed a spot on her right lung and she and her husband await with dread the diagnosis that she may have contracted lung cancer as a result of the ETS exposure.

No worker should have to face such unnecessary hazards at the price of earning a living.

There is not time here to examine the economic cost of workplace smoking but in my exhibit I have given examples, many examples, of employees whose work prospects have been dimmed and whose careers have been cut short because they could not stand exposure to

tobacco smoke.

One writes, "On exposure to tobacco smoke, my lungs react by filling with fluid. It was medically necessary to take disability retirement in 1975."

Another: "I've had to give up jobs and job opportunities because smoking was permitted in workplaces."

And it may be noted that such treatment of sensitive, nonsmoking employees would appear to constitute discriminating against disabled persons in violation of Title I of the Americans with Disabilities Act.

One may also notice in passing that these are not individual tragic stories. They are all acute losses to society, to the state of Maryland, to the United States, when these people who could have productive lives are being put out of service.

I can only mention that briefly increasing volume of medical and scientific knowledge which have been reflected in a growing volume of administrative and legal proceedings which nonsmokers have taken to try to

protect themselves.

One or two cases indicating the trend are, one, the case in which California Workers' Compensation Appeals Board granted the claim of a nonsmoking waiter who suffered a heart attack as a result of working for five years in a smoke-filled bar. A settlement of $10,000 was awarded to him, together with $85,000 reimbursement for medical bills.

CHAIRMAN MARSHALL: Pardon me. I don't mean to interrupt your comments, but is that in the documentation that we received?

MS. MUELLER: That is in the document which you have received, yes.

CHAIRMAN MARSHALL: We will be looking that over. If you would like --

MS. MUELLER: You would like me to summarize.

CHAIRMAN MARSHALL: Yes, please.

MS. MUELLER: Very good.

In closing, I'd like to express the hope this information will be of assistance to the Board. Governor Schaefer and Chief Judge Murphy have, through

their smoking prohibition measures, shown the way to a healthier and more productive workplace in the great state of Maryland and their leadership should be followed by the state agencies.

This Board would not, I am sure, wish to justify the comment of one of the Maryland employees printed in the exhibit who sadly stated, in relation to his ETS contaminated workplace, "MOSHA can't be bothered."

I'm sure he's mistaken. Thank you.

MR. BANZHAF: Mr. Chairman, I'm going to take less than the 15 minutes that remain in our hour to try to respond very quickly to a number of points that were made by the tobacco industry.

The first witness objected that somehow you are regulating behavior and argued that this was improper. Of course, as you pointed out, there are a number of OSHA regulations which also regulate smoking in various contexts, so it would not be a first for regulating behavior. We also regulate sexual harassment, which is another form of behavior. These all may be somewhat difficult for employers to police, but when there are

extreme violations the law does step in. I see no problem here.

It's been argued several times that this is a Legislative issue but, of course, it's clear that the Legislature in the state of Maryland has delegated to you, this Board, the authority -- indeed, the duty, to adopt regulations as you find reasonably necessary to protect the health of the workers in the workplace.

Certainly you have that authority to do so. If the Legislature feels that you have erred once you have made your decision, they will appeal to the courts -- the tobacco industry always threatens to do that; they rarely do -- and certainly the Legislature can always step in then and override what you do.

But the mere fact that this may be somewhat controversial or that the Legislature may act if it wishes doesn't in any way undercut or preclude you from acting.

There is memoranda in there from Victor Schwartz saying that all this threat about lawsuits is nonsense. Vic is an old classmate of mine. We've been debating

this for about 15 years. I keep saying we're making progress. He keeps saying we're not.

Suffice it to say, we'll be happy to give you a list of about three dozen lawsuits we've won in Workers' Comp, Unemployment Compensation, Disability, common law tort, more recently in battery. The Courts increasingly are holding that, yes, exposing people to environmental tobacco smoke is a wrongful act.

There is a case under the Americans with Disabilities Act, several under the Federal Handicap Act -- they have a different standard; there's is what is reasonable. All the cases have recognized that people are entitled to protection.

Since they do not deal with the class standard you do, they have not required a totally smoke-free environment. They have, of course, banned smoking in various offices where people happen to be.

We've already dealt with the issue, I think, of the Benzene cases and why this is very, very different. The argument that it's a product classification -- I don't understand that you're banning any product. I

understand that you're banning an activity or a thing from the workplace. I don't suppose that if you decided, for example, to ban switchblades from the workplace that that would be a product category. You'd have to meet whatever standards he's talking about.

In any case, there is a compelling local condition. That is, you have the highest cancer rates in the country. I can't think of anything more compelling.

Dr. Gori came in trying to undercut the scientific evidence here. Quite frankly, I'm a little bit surprised that only one appeared. Usually they appear four and five and six. I think, quite frankly, they probably abandoned the idea of a serious challenge on the science.

They have made all these arguments. Dr. Gori testified twice before the EPA Science Advisory Board. Both they and the EPA have uniformly rejected all of his testimony and that of the other tobacco industry people.

By the way, if you look through here you'll find

he has no published works that they felt worthy of citing. If he wants to participate in the debate, that, I think, is the way to do it.

With regard to the argument that we need more experts, I would submit to you we've had expert study. EPA, NIOSH, Surgeon General, U.S. Public Health Service, National Academy of Sciences and the World Health Organization seem to be about as much expertise as we need.

We've heard evidence about filters. The gentleman may be in the business, but he apparently doesn't realize that it's a matter of science. You can't filter out most of the gaseous components of tobacco smoke and the respiral particles because of their size. They're incredibly difficult to filter out with regard to most.

Let me, if I can, end by looking a little bit at some of the scientific challenges because I know some of this may be old hand to some of you, but some people do get confused and the tobacco industry does make a point of it.

If I understood the testimony correctly, they said most of the studies show that something doesn't do something. They've also said most of these studies are worthless, they're statistically wrong, and so on.

What they really mean is that many of these studies do not establish the conclusion to a 95 percent probability. What we do in these studies is we ask, could the result have happened by chance, by accident? And, ordinarily, what we rely only on one study and where we have what we call a two-tailed distribution we ordinarily feel we want to have 95 percent confidence as the thing couldn't have happened by accident, by happenstance, more than 5 percent of the time.

We sometimes use a 90 percent standard. There are a number of court cases upholding it. NASA uses a 99.9 percent standard because you don't want to put something up in space which has a 4 percent or 2 percent probability of failing.

So when a study comes out and we find something only by a 90 percent probability or a 10 percent confidence level, it doesn't mean the study is

worthless. And, indeed, does it make that much difference if I wanted to give you a pill and I said, well, look, sir or madam, we only know that this will cause lung cancer or whatever it is 90 percent probability rather than 95 percent probability. It seems to me that doesn't make too much sense.

A more important point though is this. We use that when we're talking about one study. When we have lots of studies, it is not so important.

Let me give you a simple example. I'll propose a game with you. I have a coin. We'll flip it, and every time it lands hands you give me a dollar and every time it lands tails I'll give you a dollar.

Before we play that game, I think you'd want to test that coin to see if I've done anything with it. We flipped it ten times and it came down six times heads. You probably wouldn't conclude very much from that because that's within the realm of possibility. It happens 30, 40 percent of the time. If we flipped it 10,000 times and it came down 5,500 times heads, you would not play that game with me at all because

intuitively you know that could not possibly happen by happenstance.

But suppose we flip it 100 times and it comes down 56 times heads. What does that prove? Will you play the game with me? Well, I'll do the calculations for you because I've done them before. I don't do them in my head. The odds of that happen are somewhere between 90 and 95 percent. I think you would conclude that you probably shouldn't play that game with me, that 90 percent likely that I've rigged that coin, but you're not absolutely sure so you say, well, let's flip it another 100 times. Let's find out, and so we flip it another 100 times and it comes down heads 55 -- 54 times.

Well, now, again, that's not statistically significant, but as an intelligent person you wouldn't say, let's throw out those studies and play the game because you'd note that the odds of it coming down twice 55 and 54 times would be very, very small, less than 1 percent.

Indeed, if we played that game over 10 and 15 and

20 -- in this case 30 times -- and virtually all of the studies come down in the same direction, some 90 percent, some 95 percent -- if we look at the larger and better studies, even more higher percentages are coming down.

When we look at those where there are dose relationships, they all tend to come down in the same direction. The chance of that happening by some kind of statistical fluke is, according to the EPA's own calculation, somewhere between 1 and 10,000 and 1 I think in 100 million, depending upon how you stack.

So this is not to say the studies are no good. Some of them because it's very difficult to detect this cannot by themselves establish it to a 95 percent probability. But, remember, all of these arguments, every objection you heard from Dr. Gori and all the other tobacco industry people was made to all of these different scientific bodies and the Science Advisory Board at the EPA composed almost half of people with a financial tie to the tobacco industry, all of them were rejected.

And, again, here we are dealing with a single tale rather than a double tale distribution and that's the statistical expertise reason why we would look, use, or why they chose to use a 10 percent rather than a 5 percent limit.

With that, I'd like to close, to thank you for your attention, and not only to invite specific questions from any of you but, indeed, to suggest to the extent you would like to engage in some dialogue with regard to any aspect of this which is troubling, and where our views and our almost 30 years of experience in this area can be of help to you.

Thank you.

CHAIRMAN MARSHALL: Thank you very much. Are there any Board members who would like to raise questions at this time?

MR. SNEAD: Is there any evidence of risk in out-of-doors work environments?

MR. BANZHAF: There is no study looking at risk in out-of-doors work environments because there it would be very, very difficult to get the large enough volume

of people and to make those studies. Certainly I would be the first to agree with you it almost certainly is far less than it is indoors.

On the other hand, we know that increasingly baseball stadiums are banning smoking even outdoors. Most recently here, Wolf Trap, where you go and you put out a blanket on the grass and lie down, people have banned smoking.

Now, in those cases because of complaints not because of some scientific demonstrated evidence, but since we know of no safe lower limit for environmental tobacco smoke anymore than we do for asbestos or benzene, I think the general rule -- and this is adopted in the Uniform Cancer Policy -- is we want to limit the exposure to the lowest feasible level.

I think as a practical matter, if you can smell it, there is some chance that it is creating a health risk and the law, therefore, would say that the lowest feasible level would be zero. As a practical matter, if the Board were to exempt some ironworker standing on top of a 10 foot high building putting on a girder

smoking when nobody else is around, I think probably you would have very little objection if you want to make that kind of an exception.

CHAIRMAN MARSHALL: Any other questions? We'd like to thank you for coming.

Now, what would normally be considered the lunch break we will recess until --

MS. WEST: Mr. Marshall, I think we have one individual that will speak right before lunch, and that is Fran Stillman from Johns Hopkins Hospital.

MS. STILLMAN: Good afternoon, and I'll be very brief.

My name is Dr. Francis Stillman. I'm Assistant Professor at the Johns Hopkins University School of Medicine. I also have done a lot of research on tobacco control, tobacco control and smoking policy implementation and evaluation.

I also direct a project that is a joint effort between the Johns Hopkins Center for Health Promotion and the community of East Baltimore. It's called Project Blast Off, and we're meeting for everyone to be

safe and smoke-free.

What I'm going to be talking about briefly this afternoon as a study that I conducted when the Johns Hopkins Medical Institution decided in 1988 that being the preeminent hospital in the country, probably the world, that it was no longer tolerable to have a environment that was not safe and healthy for their employees, visitors, staff, and anybody else who was in and out of our institution.

Not only did we develop a policy to ban smoking throughout the institution, but we developed an evaluation of this policy to determine what happened. And, basically, we had taken the lead in medical institutions across the United States, and this study actually set the tone of such evaluation.

We looked at what was happening in our work force, and at the time that we evaluated only 21.7 percent of the work force were smokers, and that's a point I think the Committee needs to take into consideration that in the United States, the prevalence is dropping, and it is a minority that, unfortunately, are continuing to

smoke.

So the majority of our employees were nonsmokers, and what we did was to look at smoking prevalence, smoking consumption. We looked at fires that someone presented the data on previously. We looked at environmental tobacco smoke in the institution. We looked at litter in the institution, and we looked at actual observations of people smoking.

So this was done before any policy was announced. We collected what we call baseline evaluation of the environmental factors on the smoking prevalence and consumption in the institution before we got started.

Then one year after the policy was instituted, we looked to see what the effect was, and being a person who was directing this implementation, the day that we went smoke-free there was a lot of events planned and we had many things going on throughout the institution before to help our employees through the process.

However, that day was a day like any other day even though people were walking around saying what was going to happen when we became smoke-free, I'm here to

tell you that we passed through that event and we're many years past that, and basically only good things have occurred.

In the prevalence of smoking, we had a 25 percent decrease in smoking in our work force. We went from, I'd say, 21.7 percent down to 16.2 percent.

We also looked in the different categories because smoking, unfortunately, it's prevalence of smoking. It's not similar across different socio-economic groups and education levels.

Our nurses when we began before the policy were smoking about 16 percent, and after the policy it dropped to 12 percent. All these were statistically significant decrements in the smoking prevalence in these groups.

Our physicians luckily had very low prevalence. There was 5.5 percent, and after the ban it was down to 2.7 percent.

Unfortunately, the clerical staff had very high smoking rates. It was upwards of 30 percent, and they did have a decrement down to 20 percent, so that was

good in that area.

Our administrative staff also had very high smoking, and it was 28 percent, and that dropped to about 20 percent. And in our service employees -- the maintenance, the housekeeping, security forces, the recordkeeping services, the smoking prevalence was upwards of about 38 percent when we started. And some of the groups I know it was even higher, and that dropped to 27 percent.

So you can see that even though the general prevalence I spoke was about 21 percent, these different groups were smoking at different rates, but every single category of employees saw a decrease in smoking prevalence.

We also saw significant decrease in consumption of smoking per day and at work in all of the groups, so we had significant decrease in the consumption of cigarettes.

We also looked at litter in the institution, and I was the one who actually -- and another graduate student at the time -- we went around and looked at the

litter which was cigarette butts, and we really could see, and it was done scientifically -- a very dirty job -- that throughout this institution we had a decrement in the litter before and after, and it is in the report.

I think the most interesting was reported earlier with fires. There was a decrease, as was reported, from an average of 20 fires per year at Hopkins -- and some of these were just plain the alarm went off and there was a minor kind of damage. They were not major fires, luckily, but in the year following this ban and subsequently the fires have dropped to zero.

And I think also we also had measurements of environmental tobacco smoke. We placed filters throughout the institution before and after. We measured environmental tobacco smoke exposure in cafeterias, in the patient areas, waiting rooms, in restrooms, in offices and staff lounges, and in corridors. And we were able to detect before high levels of ETS, varying in these different locations, and after the ban in every area there was significant

reduction.

Unfortunately, in all these areas except restrooms.

Now, we did see a substantial decrease in restrooms; however, it was not significant. We did find in the other areas that we were able to reduce the exposure of our work force and our patients to environmental tobacco smoke.

We've gone on and have looked at trying to use this to help our patients and, again, we find this has been very, very successful in getting patients to even stop smoking when they come into the institution.

So I think that what we found is setting a standard and a policy to eliminate the smoking was extremely successful at the Johns Hopkins Medical Institutions. We went on to work with the whole university, what is now smoke-free. So the entire Johns Hopkins University -- and it's actually world-wide -- is smoke-free.

We found there was no turnover rate, and we were particularly concerned about our nurses, since they are

a precious commodity. There was no turnover rate. No one quit because of the policy.

As I said, we found lower prevalence afterwards. We found a drop in consumption. And even employees -- it's not in this paper; it's in another one that will come out shortly -- employees who had negative attitudes, and there were some who were not pleased that we were implementing a ban on smoking -- even employees with negative attitudes went on to quit smoking at the same rate as the smokers who had favorable opinions of the policy.

So there were smokers who were in favor of this policy. There were smokers who were not, and they had similar quitting rates, which was significant.

We found lower exposure to our employees and our patients and visitors. We found fewer fires, and we had a cleaner work place because we measured litter also.

I also wanted to say that these policies work. We are one of the largest employers in Baltimore. We also are in an area where even though Maryland has the

highest cancer rates, two of the census tracts around Hopkins Institution has had the highest cancer death rate in the country, so we are concerned, not only for the institution but that's why we're reaching out into the community to work with them also.

ETS is not an inconvenience, as has been cited. It is a major health risk. And I think that that's something that we all have to keep in mind because the smoke screen that's set up talks about irritations and inconveniences misses the point when we talk about a major health risk in this country that the Environmental Health Agency has listed as a Class A carcinogen, and it's time that we really pay attention to these kinds of issues.

I also, since we also work on the local level in Baltimore in trying to get the communities to understand and to take action, which they are doing, that there is a need for local jurisdictions and for state bodies such as this to take action because, as we mentioned previously, federal government seems to be very slow on the uptake on a lot of these things, and

there is a need for local jurisdictions to continue the effort to protect the health and safety of their citizens.

Thank you.

CHAIRMAN MARSHALL: Thank you. Any questions?

MR. LAWSON: I have several questions. You mentioned the fact that you tried to discourage patient smoking. Do you outright ban patient smoking at this point?

DR. STILLMAN: Yes, we do. And I just completed the study of that and at this point the compliance rate among patients is close to 90 percent. I think that to be honest, when you ban there is going to be people who will sneak smokes. And this is an effort that we have geared attention to.

I was the one that got all the complaints and all the information. I am also a clinical psychologist, so they thought that I would be the one to handle it. This really, there were not that many complaints from our employees. We also asked employees to send in, you know, any kind of statements about this, and the

preponderance of the statements that were sent to me -- and I read thousands of them; we have a huge work force -- were from the nonsmokers who were concerned about having to pass through smoke at the doorways and so, therefore, we moved smoking into designated outside areas far away from the doorways.

So it does work.

MR. LAWSON: Okay, in your outside designated areas, I take it for granted there's no environmental controls for winter months, for providing heat or any comfort for those employees?

DR. STILLMAN: No, just outside.

MR. LAWSON: Okay. And also, when you implemented the program, did you offer any type of programs in association with this to help employees cease smoking?

DR. STILLMAN: Yes. This was -- I think that when I developed this implementation process, our main goal was basically to provide a safe and healthy workplace, and the message was, you can't smoke in the workplace, and we want it to be limited. However, if you need any assistance, it was there.

We educated our work force about the dangers of environmental tobacco smoke, the smokers and nonsmokers, and provided a series -- and it's also been published in Tobacco Control, a series of smoking cessation activities, plus cardiovascular risk reduction activities throughout the work place.

MR. LAWSON: Okay. One last question. Some employers are providing at their expense the nicotine patches as part of the cessation programs, and it's a point of debate that some employees are saying, well, if you expect me to stop smoking then you should underwrite the cost of those patches.

What has been Hopkins experience in that area?

DR. STILLMAN: Well, what we did before the patch was --

MR. LAWSON: What about currently, if you have new hires that are smokers when you hire them?

DR. STILLMAN: That's an interesting point. At this point, we are still continuing some activities. The smoking cessation programs really are not what smokers seek out. Smokers tend to quit on their own.

We did have some smokers come. Hopkins does not provide patches to its employees.

CHAIRMAN MARSHALL: Thank you. Anyone else? Thank you very much.

We are going to recess for lunch. This has moved the date up a bit. We have ten more speakers that have signed up. I don't know how many otherwise are here.

We will conduct this hearing to allow for the total amount of time of eight hours for the hearing. Those who are unable to speak, we can request that you attend Frederick hearings so that you can be able to speak.

I said all of this to say that those of you who speak I hope you don't have a lot of air and are somewhat short-winded in your presentations.

(Laughter.)

CHAIRMAN MARSHALL: So that there's not a lot of repetition of what has already been said. We want to hear you, but you're sitting here listening. You heard what the other folks said. If you want to say you agree with them, fine, but if you want to repeat what

they said, I would encourage you not to do that or at least be extremely brief in doing so.

So we will reconvene at quarter of two, which is about 55 minutes from now.

[Whereupon, the hearing recessed, to be resumed at 2:00 p.m.]

AFTERNOON SESSION

(1:50 p.m.)

CHAIRMAN MARSHALL: We ask you to take your seats, please. We are about to reconvene the hearing.

Ms. West, would you call the first speaker?

MS. WEST: The first speaker is Ms. Anne Gariazzo.

MS. GARIAZZO: My name is Anne Gariazzo, and I became ill in 1989. I was diagnosed as chemically sensitive in 1991.

I support the regulation against an employee smoking in the work place. It may prevent illness reactions in the susceptible, and it will make places of employment more acceptable to persons disabled with asthma and environmental illnesses.

However, I do not believe that the proposed regulation does far enough. I would like to see a regulation to prohibit smoking in all public places, and within 100 feet of the entrances to public places.

Passive smoking helped to make me sick. Prior to becoming chemically sensitive, I was not among the nonsmokers who lobbied against smoking in the

workplace. However, in the fall of 1988 my management consolidated all smoking in my office building into one smoking room on the floor where I worked. This arrangement was their effort to strike a balance between the needs of smokers and nonsmokers.

However, the smoke particles did not stay in the smoking room and drifted in clouds onto the rest of the floor. Several months after the smoking room opened, I began to experience dizziness, difficulty breathing at work and nodding off at my desk, and I developed severe allergies for the first time ever.

Soon, I developed debilitating reactions. Although it took thousands of dollars and much time to get a diagnosis.

Because of my experience, management closed the smoking room down even though the administrator of my agency was a smoker. However, by then the process of my illness had started, and my continued working in the building among all the equipment and conditions we expect in a modern office building caused me to go further downhill until I had to stop going to the office.

Like my management, my doctors explicitly link the work place to my illness. They see the exposure to passive cigarette smoke as an important triggering factor in my becoming chemically sensitive.

Since becoming chemically sensitive, I now count myself as a nonsmoker who objects to passive smoking. While smokers may feel picked on now, I believe that the discomfort and inconvenience experienced by the smoker in not smoking in the work place must be weighed against the disability and suffering of someone who was made severely ill by passive smoke.

As a chemically sensitive person, my life as I knew it before is gone. I can no longer work in a normal office environment. I cannot go to church. I cannot participate in regular recreational activities such as going to the movies or cultural events. I formerly enjoyed going to restaurants. I must eat a restricted diet and I've spent thousands of dollars retrofitting my house to make it accessible to me.

The illness has been devastating to me financially. It has been devastating to my family and

my loved ones. It has been especially hard on my closest loved ones who must make major accommodation to visit me for an afternoon.

I have lost some friends.

Passive smoking makes the workplace inaccessible for some people. Because persons with asthma and chemical sensitivities can become more ill due to the effects of passive smoking, permitting smoking in the workplace makes the workplace inaccessible to them.

Like many persons, they may have to work, however, and continued exposure could increase their level of disability.

I believe this is discrimination.

Passive smoking by people who are not employees or at the entrances to public buildings also makes public places inaccessible. I do not believe the regulation as currently worded goes far enough. Under current wording, customers or volunteers in the building will still be able to smoke. People will be allowed to smoke in the entrances of public buildings.

Therefore, employees and others will only be

partially protected from the dangers of passive smoking and buildings will not be totally accessible to those disabled by smoke.

Total protection and total accessibility are important because the Americans with Disabilities Act requires the combination and because we have no way of knowing what the thresholds are for causing passive smoking related illness.

I urge you to at least implement the proposed regulation to require employers to prevent employees from smoking at the workplace. I encourage you to consider making the regulation broader so that smoking would be totally precluded in anyone's workplace. I mean, restaurants, shopping malls, not just office buildings or within 100 feet of the entrances to any workplace.

Thank you very much.

CHAIRMAN MARSHALL: Thank you.

Any questions?

Thank you very much for coming. We appreciate your comments.

MS. WEST: I'll call James L. Repace.

DR. REPACE: Mr. Chairman, ladies and gentlemen of the Advisory Board.

I'm appearing here today as a scientist who has investigated issues related to indoor air pollution and, specifically, environmental tobacco smoke, since about 1975.

My name is James Repace, and I am a physicist and policy analyst at the United States Environmental Protection Agency. However, I am appearing here as a private citizen and a resident of Maryland. My address is 101 Felicia Lane, Bowie, Maryland 20720.

I'd like to describe the results of my investigations into environmental tobacco smoke which I have published in a series of about 40 papers in the peer reviewed scientific literature over the past 17 years, and this is by way of a tutorial and I have been, as well, involved as a policy analyst in the introduction of indoor air pollution and environmental tobacco smoke to EPA.

As one of the speakers in the tobacco panel

mentioned this morning, risk assessment is the methodology that we use to assess environmental contaminants and particularly contaminants in the workplace, and I have published many papers on risk assessment of passive smoking.

I'd like to discuss some of the issues involved in the question of: How much tobacco smoke are people exposed to? What effect does exposure to a given level of tobacco smoke have? What are the appropriate control measures for environmental tobacco smoke? And, finally, what are the preferred methods of control?

Risk assessment has four components: hazard assessment, exposure assessment, dose response assessment, and risk characterization.

If the risk is characterized to be a significant one in our society, we regulate it and that is the process, as you know, which is called risk management, and I want to go through all of those phases.

This is a very complex issue, and I'm going to try to simplify it as much as I can. I did work on the air policy staff of the assistant administrator for air and

radiation for nine years and one of my jobs was to translate difficult scientists, difficult scientific issues into the grist for policy-making. I'll try to do that to the best of my ability here.

(Showing of view slides.)

DR. REPACE: As you can see here, lung cancer is one of the preeminent things which is associated with tobacco smoke. You can see the differences, profound differences, in lung cancer mortality rates in smokers and in non-smokers.

You'll also notice, however, that nonsmokers do get lung cancer, and that the amount of lung cancer they get goes up with the duration of exposure, as evidenced by the difference in lung cancer mortality rates in those two age brackets.

Now, it is obvious when anyone looks at a life table like this for 35-year-old male smokers and non-smokers that for 100 percent alive at age 35 there is only 10 percent of smokers alive at age 85 and about 40 percent of nonsmokers.

Now, you can easily see that if tobacco smoke were

some new thing that the industry wanted to bake into bread, to put into Coca Cola or to introduce into our environment in any way, this is a product that would never make it. Clearly, this is an extremely toxic substance.

And I don't think many people would worry about whether low levels of this very dangerous pollutant were dangerous or not. You would want to get it out of your drinking water, out of your food, and, indeed, out of your air.

Exposure assessment. How much tobacco smoke are people exposed to?

As you heard this morning, the tobacco industry feels that you would have to spend a very long time in a space with smokers to inhale the equivalent of a single cigarette. Even if that were true, but it is not, it wouldn't mean that tobacco smoke was safe. It would simply mean that you got a certain dose over a certain time and it would create a certain risk.

In our job as public health officials is to ascertain how much that risk is and what to do about

it.

Now, back in 1977 Dr. Alfred Lowry and I took this device which is a portable respirable aerosol monitor, which is this yellow box here which measures the fine particles in the air. And we took it into a variety of spaces indoors and out where people either were smoking or were not smoking.

This happens to be Denny's Restaurant in Laurel, Maryland, which has nonsmoking sections, and we took it on the streets of Washington, and here is Dr. Lowry, who works as a research chemist at the Laboratory for the Structure of Matter under the staff of Dr. Jerome Karl, who is the 1985 Nobel prize winner in chemistry.

We measured with our balance in places where there was heavy commuter traffic to assess the automobile's impact on respirable air pollution, in the homes of nonsmokers during dinner parties, and in churches. And this is St. Pious X Roman Catholic Church in Bowie during communion services, and you can see there's a very high person density here but, of course, no smoking.

Then we took our monitor into the capital center sports arena, which, I guess, is now called U.S. Air Arena, during a hockey game, and I think you can easily see the tobacco smoke hanging in the lights above the crowd, and we also took our monitor into dinner parties involving smokers. We monitored in offices, in lodge halls, in restaurants.

This is the Kennedy Center roof terrace cafeteria in Washington.

In bars, in nightclubs, at weddings, in waiting rooms, in bowling alleys, in bingo games, in dives and in dinner theaters.

This one is up in Laurel.

I won't say where that one is, but it's in College Park.

(Laughter.)

DR. REPACE: Now, this a plot of the respirable aerosol density, the amount of pollution we measured on the vertical access, versus the number of smokers per unit volume on the horizontal access. This is all the data that we took in places where people were not

smoking, and that includes outdoors on commuter highways. And you can see the levels of aerosol range from about 20 to about 60 micrograms per cubic meter.

As soon as we went indoors in places where people were smoking -- and that's all these data points with letters on them -- you can see that the national air quality standards were exceeded in every single one of the places where people were smoking.

You can see there's a general trend of air pollution which increases with increasing smoker density and in some places --

This was a bingo game in Bowie, Maryland. It was 1140 micrograms per cubic meter inside the bingo game it was 40 micrograms per cubic meter in the parking lot outside, and when I pointed out to the game operator that if this space were in the outdoor air we would have to close it down because it was above the 24-hour-significant harm level -- and he said, well, perhaps we'd better turn on the ventilation system.

So you can see that ventilation does have an impact on the levels of environmental tobacco smoke,

and, in fact, if you look at that data a little bit more carefully and plot the radians of air exchange, you can see that that, indeed, had about an air exchange rate of about half an air change an hour.

And generally in society the ventilation rates are a function of the occupancy, and so places with higher smoker density do tend, in general, to have higher ventilation rates. This is a restaurant up in Laurel, Maryland. It had about seven air changes per hour, which is what a restaurant is supposed to have if it's properly ventilated.

Some, like this one, do not.

But even so, the level here is well above 300 micrograms per cubic meter, and here is EPA's new standard for inhalable particles at 50. So you can see, that's six times higher, and just look at, in terms of gross air pollution, tobacco smoke is clearly a very significant source of just pure particle air pollution indoors.

And for that reason alone, I believe it warrants your attention.

Now, we became interested in whether we could predict levels of air pollution created by environmental tobacco smoke indoors. And we did a number of experiments in the Aerospace Building in Greenbelt, Maryland, and this at the time was the home of the Prince George's County Department of Environmental Health.

These are four nurses who worked in that department who were smokers. We did this experiment with them smoking in this ventilated conference room which was ventilated at the rate of four air changes per hour, which is about four times the rate at which that conference room would normally be regulated, but we increased the air exchange rate by means of some mixing fans which you can see in the lower right-hand corner.

And this is what the data looks like. If you plot the air pollution as a function of time, you can see a very rapid increase in respirable particle level. Because of the mixing fans, the level was about 60 micrograms per cubic meter because of dust we churned

up with the fans. We subtracted that off and you can see in a half hour's time with just four people chain-smoking in this room, we're up at 2,000 micrograms per cubic meter, which is double the significant harm level of 1,000.

And this much smoke would be generated by about 11 ordinary smokers in a room which was about 20 by 22, with an 8 foot ceiling.

So you can see tobacco products generate enormous volumes of air pollution which are not controlled, even by excessive levels of ventilation.

Also, you'll notice that the line we have labeled "Theory" there was a theory that we developed to predict the levels of tobacco smoke indoors, and you can see that it, indeed, is able to predict them very well.

We also looked at cigars and we did the same kind of growth and decay curves for particulate matter in carbon monoxide and, again, our theory can predict those very well.

So we were led to develop an indoor air pollution

transport model for a typical building where we could calculate the levels of tobacco smoking using mathematics in any building as a function of the emission rate of cigarettes. It turns out, all cigarettes look alike in terms of their side-stream emissions, plus or minus about 20 percent, and so all you really needed to know to do the calculations was the generation rate of the tobacco smoke, the volume of the room, and the rate at which the room was ventilated.

And so we developed this very simple equation after a certain period of time you get what we call a steady state condition indoors, and we get an equilibrium concentration of tobacco smoke. And it said something very simple.

It said that if you take the smoker density and divide it by the air exchange rate and multiply it by a constant which has to do with how much smoke a single cigarette emits, you can calculate the level of air pollution from cigarette smoking in any room.

And we used that in conjunction with the ASHRAE

standards which were mentioned this morning because the ASHRAE standards specify ventilation rate as a function of building occupancy and, therefore, if you know the smoking prevalence in a work place, you know what the emission rate is, if you use the ASHRAE standard you know what the air exchange rate, and, therefore, you can calculate for any workplace knowing only prevalence of smokers, the building volume and the air exchange rate from tables which you can get here. You don't even have to measure it.

You'll know approximately what the level of air pollution is going to be.

So what I'm trying to tell you is, calculating the exposure concentration of nonsmokers in the workplace is a standard scientific thing. We can do it with a great deal of certainty and, therefore, we can calculate how much tobacco smoke in terms of particulate matter is passively inhaled by a typical nonsmoker if we know approximately what their respiration rate is and how much time that they're going to spend in a particular microenvironment.

And we know how much time the average person spends in particular microenvironments from what we call time budget studies of sociologists, and it turns out that most people spend most of their time, as one might expect, either inside one's home or in one's workplace. Those are the two microenvironments of importance for exposure to environmental tobacco smoke.

And we used that to calculate the level of tobacco smoke which might be inhaled by a typical nonsmoker in the United States. It was about a little under 1.5 milligrams of tobacco tar a day.

And so using that mathematical model, we then looked to the epidemiological literature to see if we could make a dose response relationship and calculate the amount of harm which would be associated with any specific level of environmental tobacco smoke.

And I should point out that environmental tobacco smoke is absorbed. The nicotine in the environmental tobacco smoke is converted by the liver to a substance called cotinine and the International Agency for Research on Cancer looked at the cotinine levels of

women, of 1,369 women in 10 different countries around the world, and you can see that there is a distribution of exposures.

And these were women who were basically exposed to their husband's tobacco smoke.

And you can also see that the typical exposure is something like about five or six nanograms of cotinine per -- in this particular paper it was expressed in terms of milligrams of creatinine excreted. You can think of it in terms of milliliters of urine excreted, and so we know what the typical exposure does is for nonsmokers. That's probably quite similar to what's in the United States.

We were also able to develop a mathematical model to predict the amount of cotinine in the urine of nonsmokers who were exposed to environmental tobacco smoke, taking the number that we estimated for the typical American, and we plugged it into this mathematical model which looked at the rate of absorption of nicotine.

It looked at how rapidly nicotine was excreted by

the kidneys, how rapidly it was metabolized by the liver, and how much volume of urine was excreted, and we made a prediction that the amount that would be expected in the typical nonsmoker would be about 6 nanograms per milliliter, and you can see that what's actually been observed in a very large number of U.S. studies is about 6.

So that we feel that our exposure model has been validated at this point. This was published in the journal, Risk Analysis in 1993. I have given you a copy of that paper. And so what I'm telling you at this point is that we now calculate the levels of tobacco smoke indoors in any workplace. We can calculate the level of cotinine in the body of any nonsmoker.

And now we're at the point where we have to decide now that we have these indices of exposure in dose, can we attach a risk number to that? In other words, can we determine whether people are experiencing what the tobacco industry this morning mentioned as the OSHA significant risk level.

And so let's take a look at that. Most of the studies of environmental tobacco smoke and lung cancer are of women whose spouses smoked. And you can see that that is an imperfect measure of exposure.

Here is urinary cotinine plotted for females and males, and these are what we would call exposed women; that is, their spouses smoke. These are so-called unexposed women whose spouses don't smoke. Well, you'd expect if they were truly good controls that their exposure to environmental tobacco smoke would be zero. But it isn't.

So you can see, we're really comparing more exposed to less-exposed, and that, frankly, is the major reason why some of the studies of environmental tobacco smoke and lung cancer don't show statistical significance. Some of them are very small studies and you wouldn't expect to see statistical significance necessarily in a small study, but it's made even worse by the fact that we don't have a truly unexposed control group. In other words, almost everyone is exposed to environmental tobacco smoke.

So you really cannot find a good control.

Despite that fact, we still see in these epidemiological studies -- and these are the ones that the EPA used; these are the 11 U.S. studies, and there are more than 30 world-wide -- you can see only three of them fall below an odds ratio of unity, which means that they were, in effect, negative studies.

In other words, 8 of them out of the 11 were positive. As Mr. Banzhaf mentioned this morning, would you think that was a fair coin if 8 times out of 11 it keeps coming up positive and only 3 times it comes tails?

So EPA analyzed all of these data in a process known as Meta analysis, which simply is a statistical combination of all of the studies, and you can see that the odds ratio that the EPA got is 1.2. And this is our mathematical theory, which predicts, based on our dose response relationship, that predicts exactly 1.2.

So you can see this is a model which is able to predict numbers which are observed in the real world.

This is not simply an academic exercise.

And the response we selected for our dose response relationship came from a large study of Seventh Day Adventists in southern California, 25,000 Seventh Day Adventists, 50,000 non Seventh Day Adventists. They were all lifelong nonsmokers and you can see the non Seventh Day Adventists nonsmokers had a lung cancer mortality rate which was 2.5 times that of the Seventh Day Adventists.

And because this was a large cohort study, we were able to pick out this number in terms of a response. We were able to get -- it was about 7.4 lung cancer deaths per 100,000 person who is at risk, and we were able to make a dose response relationship out of that for passive smoking and here it is on the bottom line here.

That's 5 lung cancer deaths per 100,000 person years at risk per milligram of tobacco tar inhaled per day. And that is the key number that we need to evaluate the risk of tobacco smoke in any microenvironment.

And you can see that we have an advantage over the

epidemiological now who looks at the risks of passive smoking as a function of spouse's smoking category: nonsmoker, exsmoker, spouse smokes 1 to 14 cigarettes a day, 15 to 19, and more than 20. And those are very crude categories, but using this mathematical model we've developed, we can now say, if you inhale this much tar, that's your lifetime lung cancer risk.

So we have actually transformed this into something that can be quantified and that, of course, is of great interest to people who do regulation.

Let's talk a little bit about risk characterization. What kind of a risk is this compared to risks that society faces?

We estimated in 1985 that there were about 5,000 lung cancer deaths a year in the United States, plus or minus 2,500, 8 out of the 9 studies that were published, risk assessments at that time, were in agreement with that. The ninth one, which was funded by the tobacco industry, was not in agreement with it.

EPA, of course, came out at about 3,000 deaths a year, which is, for purposes of risk assessment,

indistinguishable from that number. We also estimated with the effects of radon would be in nonsmokers only at the time we did this we estimated 3,600 deaths a years. Since then, the National Research Council has suggested that a lower number be used to estimate the effects of radon on nonsmokers, and we would now place that number at about 2,400 deaths.

So you can see, even compared to radon for its effects on nonsmokers, environmental tobacco smoke is about twice as bad.

These are all of the outdoor air pollutants regulated by the Environmental Protection Agency. This is in the outdoor air, now. Asbestos, vinyl chloride, airborne radionuclides other than radon, coke oven emissions from steel plants, benzene from chemical factories, and arsenic from copper smelters, and you can see they total less than about 87 deaths a year. And environmental tobacco smoke is two orders of magnitude higher than that.

So this is a very significant risk. The tobacco industry, of course, believes that passive smoking is

controversial but they are really the only ones who believe that.

If you look at what the public health professionals have to say, as was mentioned earlier, that all of the public health organs that we have established in American society and internationally have said that this is, indeed, a cause of lung cancer, and I would point out especially that the National Cancer Institute has said this. That is the preeminent cancer control agency of the United States Government.

They're all in agreement.

Only the tobacco industry says that we shouldn't believe that tobacco smoke is a cause of lung cancer, and I would say to you that that's just junk science.

The Environmental Protection Agency has said that tobacco smoke is one of the most widespread and harmful air pollutants, and let's look at its effects in the workplace very specifically.

Let's look at how you would control environmental tobacco smoke. These are the range of policies that we see in workplace. No policy at all. Environmental

alterations. Restricting employee's smoking to designated areas on the same ventilation system or on separately ventilated areas. Banning smoking at the workplace and even going to the extent which some fire departments have done of exclusive hiring of nonsmokers.

Now, let's look at the risks associated with all of those different control measures. Now, in our paper which we published in Risk Analysis in 1993, we looked at what the database was for environmental nicotine measurements in workplaces. These were 355 workplaces, 47 homes, 40 restaurants and 85 aircraft. And these were generally either work shift averages, waking day averages, hourly averages or flight averages.

And these are all places where nonsmokers are exposed in the workplace except, of course, for the homes.

You'll notice a striking fact. This is averaging crudely all of the data that are there. This is not a weighted average, but just a very crude average to give you a picture of the kind of typical level that you

might expect to find as an average in a workplace.

You'll notice there's not much difference. It's around 10 or 15 micrograms of nicotine per cubic meter.

What does that mean in terms of a risk?

Now, here's the bottom line. We've plotted the lifetime lung cancer mortality on a semilogarithmic scale here and we've plotted the nicotine concentration in micrograms per cubic meter, 10 micrograms per cubic meter is right here, and you see that corresponds to a risk of something like about 2 or 3 times 10 to the minus 3, or, in other words, 2 or 3 per 1,000.

Now, our former OSHA attorney this morning said that a risk of about 1 in 1,000 was the OSHA significant risk level. Well, you can see the average in a typical workplace is two or three times that. And, in fact, if you looked at all the data that are in the literature for nicotine, you'll find it generally varies between 1 and about 100 micrograms per cubic meter.

That's right. Some work places are well above 100 micrograms per cubic meter where they have even a 1 in

100 or better life-time risk of lung cancer.

And this is for a 40-year working lifetime.

This is the de manifestis risk level above which the federal government has invariably regulated environmental carcinogens. This is what we call the de minimus risk level, which is 1 in 1 million lifetime risk, and you can see to get down there you'd have to have no more than about 7 or 8 nanograms, billionths of a gram, of nicotine per cubic meter.

Well, if we're sitting up here and we have to get down, how many factors of 10 is that? One, two, three -- three factors of 10 to get down to what we would call an insignificant or trivial risk.

So what that tells you right away is this is the level of control that you're going to have to apply in the workplace to control environmental tobacco smoke. You're going to have to reduce it to 1/1,000 or more of what it is typically right now.

Those nicotine levels were measured within the last five or ten years, so they're pretty current level indications of levels of exposure and some of that data

was even taken by the tobacco industry itself.

Well, let's look at the probability of a lung cancer death in a work place as a function of ventilation rate. Now, the tobacco industry in the form of Mr. Turner has suggested that ventilation is a very good control measure for environmental tobacco smoke.

Here's ASHRAE's 62 1989 which is the ventilation standard currently promulgated by the American Society of Heating, Refrigerating and Air Conditioning Engineers. 20 cubic feet per minute per occupant. That corresponds to a risk which is of the order of 10 to the minus 3.

If we wanted to get it down to a 10 to the minus 6 level which is the bottom line here, you can see we would have to have, what, this is 100, 1,000 -- 10,000 cubic feet per minute per occupant, or better to get it down that way.

So you can easily see that ventilation is not a control measure for environmental tobacco smoke.

Well, how about separation of smokers from

nonsmokers in the same space like smoking sections in restaurants? Here's the State Department cafeteria in Washington. Here's Denny's Restaurant in Laurel. Here's the Goddard Space Flight Center cafeteria in Greenbelt.

You can see the levels are certainly higher in the smoking sections, these red bars. But the shaded bars, they're not down here zero. They're not even as low as the air in the outside, and this is purely nontobacco.

So you can see that this is not a very good control measure for environmental tobacco smoke.

Well, how about the dilution solution to pollution? How about separating smokers from nonsmokers on the same ventilation system? Again, we've plotted the lung cancer risk here as a function of the number of square feet allotted per smoker in a building with a ten-foot ceiling.

Well, to get to a de minimus risk, you'd need well over a million square feet per smoker. That's more volume than most buildings have.

So you can see that putting smokers in the same

ventilation system doesn't work either.

Now, the Environmental Protection Agency has said that the only real effective ways to limit smoking are to put smokers outside the building or to put them in separately ventilated areas which are directly exhausted to the outside.

Well, I wrote that policy back in 1987, and I don't go with it anymore and that's where my agency and I part company, and there are three reasons for that.

If you look at the cancer odds ratio for a smoker as a function of how many smokers that he or she lives with, if you normalize their cancer risk to one, if they don't live with any other smokers, if they live with one smoking household member, two, or three or more, you can see there's a general trend of their cancer risk increasing from exposure to each other's smoke. So that's the first reason why you don't want to put smokers in a separately ventilated area because you increase their cancer risk.

We already have the highest cancer risk here in the state of Maryland. We don't want to put smokers in

a smoking area where we're going to increase their cancer risk even further.

So what about some other reasons? And probably the best reason I can think of is: Do nonsmoking areas really work? Do they contain environmental tobacco smoke 100 percent?

And the answer is, no. From the limited data that we have already in the scientific literature, it indicates that separately ventilated areas under negative pressure -- and I would include Fran Stillman's Johns Hopkins University Hospital as one of these examples, and I've mentioned them in the papers I've published -- shows that these areas leak.

New data coming out of the state of California -- which I've seen and which has not been published yet -- for a Bingo hall and a restaurant where they try very hard to put these under the proper negative pressure, they leaked, with risks which would be equivalent to about 10 to the minus 5 and 10 to the minus 4.

So I don't believe that these things work at all.

And the final reason I would advance is one which

was alluded to by Dr. Stillman this morning, and that is if you put smokers outside of the building, they are very likely to quit. You can get up to 25 percent, and new data coming out of the state of California confirms this, that you can get quit rates as high as 30 percent if you put smokers outside of the building and also the ones that remain smokers will smoke less, as you might imagine.

So it's a very good control measure.

So here is the preferred policy for regulation. Smokers smoke outside the building and you can see this is a very common sight now in American cities. It's a workable control measure, and it doesn't cost anything.

And, finally, you can see the estimated total deaths from passive smoking -- I've only talked about cancer. This is heart disease. And you can see there are an estimated 40,000 deaths a year from heart disease from passive smoking according to the American Heart Association and that would indicate that the total mortality from passive smoking is probably 10 times what we're looking at.

So we're dealing with something which is the third leading preventable cause of death in our society.

So this is something which is certainly worth your attention.

Thank you and I would be happy to answer any questions.

CHAIRMAN MARSHALL: Do you have any questions?

MR. SNEAD: In your graph of lifetime excess risk versus nicotine concentration, where did those risks come from, those estimates of risk?

DR. REPACE: Those estimates of risk came from translating the nicotine numbers using our dose response relationship into a lifetime mortality risk, and those number -- you know, that has been published in the peer reviewed scientific literature.

MR. SNEAD: Is that based on smokers?

DR. REPACE: No. That is not based on smokers. That is based on nonsmokers. The Seventh Day Adventist study which I alluded to gave us the number for that. As I said -- I didn't say why the Seventh Day Adventist study was so important and perhaps that led to a little

bit of confusion.

But Seventh Day Adventists, because of their lifestyle, their religion proscribes smoking, so they're very unlikely to be exposed at home, and a great many of them work for the Seventh Day Adventist Church, so they're very unlikely to be exposed at work relative to lifelong nonsmokers in the population.

And so we took that mortality rate difference, and we said, let that be an estimate of the lung cancer mortality effect of passive smoking; and we'll divide that by what we think the average nonsmoker gets in terms of tobacco tar out of the air, and we formed our dose response relationship. That translated into nicotine terms -- which is still a little bit for me to go into, but I should have mentioned it -- and that's how we got the risk numbers.

MR. LAWSON: The clothing styles in the slides date those pictures quite a ways back. What were the average years of where those studies were done, and are those slides included in our submittals for exhibits?

DR. REPACE: Most of the slides are included in a

paper that I published in the Journal of the American Medical Women's Association, and there are some of the other slides are included in some of the other papers. So they are basically all there for you to look at.

These estimates -- the dose response relationship was derived basically for exposure and response conditions which were extant in the 1980s. Now, once you have a dose response relationship that says you get so much risk from so much exposure to tobacco smoke, it is valid even though the exposures in the 1990s are certainly less than they were in the 1980s, so that's still a valid expression.

DR. deSILVA: Were you able to get any reference to smoking in outdoor places?

DR. REPACE: No. Obviously, in outdoor workplaces such as stadia and places like that you can be exposed to high levels of tobacco smoke for brief periods of time. This is really an outdoor air pollution dispersion problem and equations we'd use are sort of similar to what you would use for a ground level release of an air pollutant.

No one has done those calculations.

The risks are probably not very high, but the annoyance factor certainly is very high, and I think that's what many people complain about. If you're sitting in a stadium, for example, and you're surrounded by smokers, the fact that there's an infinite volume around you doesn't make a lot of difference.

For example if you build a camp fire, even though that smoke goes into an infinite volume also, if you stand close to the campfire you're going to be exposed to the smoke, and if you stood there for an hour you'd probably be dead of carbon monoxide if the smoke were blowing right in your face.

Of course, it doesn't usually blow in the same direction for an hour at a time, but it certainly can be quite noxious, and I think that's what we're dealing with an outdoor workplace.

MR. LAWSON: One follow up question. Your previous speaker before you had mentioned prohibiting smoking within 100 feet of the entrance to public and

also occupational workplaces. You're proposing to move the smokers outside. What's your position on congregation around entrance ways?

DR. REPACE: I think it's a very poor idea for two reasons. One, is, obviously, the nonsmokers have to walk through the cloud of smoke when they come in. Two, it often is true that you have negative pressure on the entrance of a building, and if you've got a lot of people congregating just outside the front doors, every time the door is opened, you're going to suck tobacco smoke into the building.

So you don't want them congregating near any entrance to the building, mainly for that reason. And also not, obviously, near any air intakes for the building.

CHAIRMAN MARSHALL: Thank you very much.

DR. REPACE: Thank you.

CHAIRMAN MARSHALL: Could we take just a brief break while we remove this equipment and put the table back up?

(Off and on the record.)

DR. REPACE: The entire body of data that I showed you is published in the peer reviewed scientific literature. I have given you probably half a dozen of the most important papers as far as this talk goes. If you want copies of the rest of the 34 papers that I published on this issue, I'd be happy to burden you with them, but if you have any questions on any of this, I think my phone number is available and you can give me a ring and I'd be happy to explicate on it.

MS. PATRICK: Are the graphics in the articles that you wrote and provided -- are the graphic slides included for reprint?

MR. REPACE: Pretty much, yes. The paper I submitted to the St. Louis University Public Law Review that has some of the graphs that are on the back end of this talk, so that really I think just about everything is there.

MS. PATRICK: And The Journal of Risk Analysis, that's a peer review journal?

MR. REPACE: Absolutely. It doesn't do anybody any good to publish this stuff in a nonpeer review

journal. If it's going to be useful, it has to go through the rigors of peer review and as all scientists discover, it is a very good process because often you do make errors when you do science, and it's nice to have one or two or three, and I've had as many as six on some of my more controversial papers, six reviewers, and it's a big help.

MS. PATRICK: Aside from the peer review, as I understood your lecture, some of the assumptions that you used in your model values were subsequently confirmed by other observational studies; is that right?

DR. REPACE: That is correct. I didn't go into the details because it's a little bit too complicated for this forum, but we looked at the American Cancer Society study of passive smoking and lung cancer done by Garfinkle back in 1981. It was one of the very largest cohort studies of passive smoking and lung cancer. It predicted a lung cancer mortality risk of 1.2, which is what our model does.

And we used our dose response relationship to

analyze the Garfinkle study in detail. We broke it out in terms of his exposed and his controls, and we broke it down in terms of women who were exposed only at work, women who were exposed at work and at home, and neither.

And we used the numbers for the percentage of working women right out of the statistical abstracts of the United States over the period of that cohort study which was 16 years. And we were able to predict on the nose just about, within 5 percent, the lung cancer mortality rate and the lung cancer odds ratio in that study.

So we felt very encouraged by the fact that we were able to validate our dose response relationship on a cohort study of Americans, passive smoking and lung cancer.

We could have used the Japanese study, but we didn't know anything about the exposure of Japanese women. We didn't know what the space ventilation was in their homes and work places; we didn't know what the volume of the homes was. We had a very good idea in

the United States of what a typical home volume is, a typical home air exchange rates are, what typical workplace air exchange rates are, and what their occupancies are. So we could get a very good handle on that.

And we were also able to independently validate the exposure model by using the studies of cotinine and body fluids. I didn't mention it, but we can also predict the level of cotinine in blood, and we can do that also to within 15 percent.

So this is a very, very good model. It's very quantitative. There is no bones about what it predicts. And there are a large number of studies out there that you can compare the predictions to.

And that's the essence of the scientific method. You make a prediction with a theory and you look to see if there's experimental data that validate it.

We are looking forward to results of the N HANS 3 Study which is the National Health and Nutrition survey which is a national random stratified sample of the United States population for plasma cotinine, and we'll

be able to validate our model on that very well, I think, when that data are available.

Everybody is aware of that database, the tobacco industry is aware of it, OSHA is aware of it, and the Department of Health and Human Services is doing the analysis slowly. It's a very expensive method. Up until recently they were only able to do two samples a week. Now, they've increased their productivity quite a bit, so within I would say probably a year we will have that data and then we will know exactly what the median value is for the population and what the most exposed values is.

And we can break out of that what workplace exposures are. I don't think they're going to be any different from what we've predicted. I think we already know what we're going to find.

MS. PATRICK: It may be useful to the Board to have the body of your studies if you have an opportunity to put that information together?

DR. REPACE: I'd be happy to put together a package. I have reprints in my office at work and I'd

be happy to send them along.

MS. PATRICK: One copy of each would be sufficient.

DR. REPACE: One, right.

MS. PATRICK: Thank you.

DR. REPACE: Okay.

CHAIRMAN MARSHALL: Thank you very much.

Ms. West.

MS. WEST: I'll call Albert Ertel, please.

MR. ERTEL: My name is Albert Ertel, and I would like to present the views of the Coalition for Smoke Free Maryland Workplaces, or which I am Chair.

By way of background, our coalition was formed by employees at General Electric Company, Rosecroft Raceway and other businesses to take regulatory and legal action to make every workplace in Maryland smoke free.

I've worked for GE for over 30 years, and I have a master's degree in systems engineering and operations research. Based on the experience and the observations of the employees who are members of our coalition, we'd

like to offer an ethical as well as medical perspective on why we now need comprehensive action by MOSH.

At GE within the process of raising our concerns to senior management about ETS exposure it became evident that the question as not is ETS a hazard. It was acknowledged the doctors recommended go smoke free. The real issue was a concern about the effect on commercial relationships with tobacco companies.

We found out about not so subtle communications from the Tobacco Institute and tobacco companies to remind GE they were major customers of GE and were concerned about smoking restrictions.

We did find support from management wanting to go smoke-free, but a reluctance that said, and I am quoting a senior manager here, "Top management hopes and prays that OSHA will force smoke-free workplaces to take us off the hook."

I'll quote some other statements in this paper that you do have the attachments for.

Some of our members who work at the race tracks and who are also active members of Local 27, the Food

and Commercial Workers Union, AFL-CIO, work in a clubhouse composed of wagering, viewing and restaurant areas and have noted a similar ethical dilemma.

The management of Laurel Race Course even stated in a letter to MOSH, "Unfortunately, a proposed smoking ban discussed by the governor has not received sufficient legislative support. His view would pronounce an effective solution to the problems presented since the public is much more receptive to changing behavior patterns when mandated by government."

In September 1992, and this has been mentioned by others and I'll be brief, Governor Schaefer issued an executive order finding, "Scientific evidence documents environmental tobacco smoke is a proven cause of cancer in nonsmokers." And he banned smoking by employees, clients and visitors in all state office buildings, including MOSH's own offices.

Chief Judge Robert Murphy, at the Court of Appeals, which is Maryland's highest court, followed that up in November '92 and, "Banned smoking of all

individuals doing business at or visiting" as well as employees in judicial branch buildings facilities.

Now, our feeling is these are very good leadership steps the Governor and the Chief Judge have taken to protect state employees. According to the national estimates, there are approximately 434,000 smoker deaths and approximately 53,000 nonsmoker deaths per year. This is a ration of one nonsmoker death for each eight smokers killed by tobacco smoke.

According to the Maryland Cancer Control Plan, which I believe is 1991 statistics, the estimate was 7,602 Maryland smokers die each year.

Applying those ratios, that means at last 928 Maryland nonsmokers die each year from exposure to ETS.

Members of the Coalition have filed complaints with MOSH over workplace smoking that involve offices, sports facilities and restaurants. We thought it interesting after our complaints that General Electric component involved did go smoke-free in office buildings with a managerial announcement -- and you've got it in the attachments -- "I believe all of you are

aware of the overwhelming evidence which supports this new practice."

GE ultimately went totally free in all facilities after a fire caused by careless smoking forced evacuation of an eight-story office building. GE also eliminated separately ventilated smoking lounges which we had had. Such lounges turned into a hazard for janitorial workers to enter, and after a couple of months, they really developed a horrible stench.

Also, by observation, I would say about one-third of the smokers when we finally did go smoke-free then quit smoking.

We've included with our filings of the Board our suggested wording for a comprehensive MOSH regulation that provides: "All employees and all individuals doing business at or visiting a workplace are prohibited from smoking or carrying any lighted tobacco products in the workplace."

To briefly summarize, we strongly feel that ethically and based on the overwhelming medical evidence, MOSH has a legal duty to provide smoke-free

protection for all workplaces. We are very pleased to see that Secretary William Fogle has now taken the initiative on this issue and note his October 28 statement in the Baltimore Sun, page 1 statement, I believe: "I just said it is time we have a rule saying no smoking in the workplace. It's hazardous as hell."

And that's almost a good two-sentence regulation right there.

We ask the Advisory Board to help extend the same protection already given state employees to all the citizens of Maryland so a recognized hazard that kills at least 928 Maryland nonsmokers each year can be overcome.

This concludes my statement. I'm glad to attempt to answer any questions you have, and I would note attachment 1 in our filing is our thoughts on the proposed regulation.

Thank you.

CHAIRMAN MARSHALL: Thank you.

Any questions?

Thank you, sir.